Programmatic Environmental Assessment for Army 2020 Force Structure Realignment

January 2013

Assisted by:

Potomac-Hudson Engineering, Inc.
Gaithersburg, MD 20878

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Chapter 1, Purpose, Need, and Scope
Chapter 2, Description of the Proposed Action
Chapter 3, Alternatives and Screening Criteria
Chapter 4, Affected Environment and Environmental Consequences

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Approved and Reviewed by the U.S. Army Environmental Command

Mark A. Lee

Colonel, US Army

Commanding

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1 PURPOSE, NEED, AND SCOPE

1.1 Introduction

This Programmatic Environmental Assessment (PEA) conducts an analysis of the environmental and socioeconomic impacts associated with the Proposed Action and alternatives to realign the Army's force structure by 2020. For this and other reasons discussed below, the action is referred to as Army 2020. The Army must field a force of sufficient size, capability, and configuration to meet the Nation's current and projected future security and defense requirements. It must also do so within budget constraints. This PEA looks at possible force structure changes at 21 installations and their associated maneuver training areas. This PEA will not result in a decision on where changes will occur, though information contained in this PEA will support a series of future Army 2020 force structure decisions in the years to come. These decisions will be made based on mission requirements, resource efficiencies, analysis of impacts in this PEA and other factors. This PEA provides an overarching perspective that will provide decision makers, as well as regulatory agencies and the public, with information on these potential impacts, enabling them to assess and compare those impacts and make informed decisions when selecting locations for reduction or realignment of force structure.

The Army is in a period of critical transition as the Nation has concluded major combat operations in Iraq, assesses force requirements in Afghanistan, and develops new strategy and doctrine for future conflicts. During this transition, the Army as part of the Department of Defense (DoD) must identify prudent measures to reduce spending without sacrificing critical operational capabilities necessary to implement national security and defense priorities. To help achieve mandated spending reductions, the Army is decreasing the current total number of Soldiers and civilians, while reorganizing the current force structure. The Army's Active Duty end-strength will decline from a fiscal year (FY) 2012 end strength of 562,000 to 490,000, and would include a reduction of at least eight Brigade Combat Teams (BCTs) from the current total of 45. This PEA looks at total Soldier population loss of about 126,000 Soldiers and Army civilians (military employees). Reductions to this extent are not required to reach an end-strength of 490,000; however, analyzing the larger number provides flexibility to decision makers over the next several years as conditions change. These factors include changing fiscal, policy, and security considerations that are beyond the scope of the Army to control.

In January 2011, the Secretary of Defense announced that the Army would move forward with a force reduction of 27,000 Soldiers from the Army's FY 2012 end-strength of 562,000. The FY 2013 defense budget request calls for a further reduction from the FY 2012 end-strength of 562,000 to 490,000. The 490,000 level in part reflects a $487 billion decrease in DoD funding over the next decade under the Budget Control Act of 2011.[1]

The Army must posture itself to meet national security objectives with potentially reduced levels of resourcing and personnel moving into the future. This will require changes in operations and will require the Department of the Army (DA) to consider how best to make trade-offs between programs and operations while strategically moving forward to preserve and adapt mission capabilities.

In order to meet national security and defense requirements, further Army operational effectiveness, and maintain training and operational readiness (while preserving a high quality of life for Soldiers and Families, all at sustainable levels of resourcing), the Army has identified the need to reduce, reorganize, and rebalance (collectively, "realign") its force structure. This realignment will result in reductions to overall Army end-strength as well as relative numbers of

[1] See "Defense Budget Priorities and Choices"; Department of Defense, January 2012

different types of units. The intent of force rebalancing is to enhance operational readiness and the ability to respond to national defense and security challenges, while preparing to do so in a fiscally constrained environment. The Army must also reduce the strength of its supporting civilian workforce.

The Army's Proposed Action is to conduct force reductions and realign existing forces to a size and configuration that is capable of meeting national security and defense objectives, implements Quadrennial Defense Review (QDR) recommendations, sustains unit equipment and training readiness, and preserves a high quality of life for Soldiers and their Families. Army 2020 realignment would allow for the adjustment of the composition of its forces to meet force requirements in high demand military occupational specialty areas, while rebalancing the number and types of units in lower priority military occupational skill areas. The implementation of Army force realignment will enable the Army to reduce its operational costs, while allowing the Army to field a smaller force that still can meet the mission requirements of the current and future global security environment.

The overall purpose of the Proposed Action is to shape the Army to meet changing mission requirements and to do so in a fiscally sound way. To meet this purpose, the Army must balance resource availability and critical mission requirements while looking for ways to increase operational efficiencies. As part of this effort, the Army must reduce the number of Soldiers on active duty and at the same time reorganize them to ensure the preservation of key defense capabilities. The Army of 2020 will be more agile and cost less than it does today. The Army will have to make optimum use of land and facilities. It will have to be stationed in places that fit the evolving strategic mission. Finally, it must do all of these things in a very cost-efficient manner, implementing changes consistent with defense priorities while preserving the ability to accomplish the mission.

In January, 2012, the DoD issued a document titled "Defense Budget Priorities and Choices" (Budget Priorities and Choices). It stated that achieving savings would be "hard, but manageable. It is hard because we have to accept many changes and reductions in areas that previously were sacrosanct…. It is manageable because the resulting joint force, while smaller and leaner, will remain agile, flexible, ready, innovative, and technologically advanced."

This PEA looks at those Army installations that have the potential to lose 1,000 or more full-time military employees from FY[2] 2013 to FY 2020, or that have the potential to gain 1,000 or more Soldiers through force restructuring. The 1,000-Soldier/civilian threshold was chosen because it represents a level of increase or reduction at a majority of installations that warrants analysis at the programmatic level. It also represents, in the case of a loss, a number that Army planners thought could produce significant economic impacts. This threshold was recently established by Congress in 10 U.S.C. §993 for reporting of planned reductions of members of the Armed Forces at military installations. The information in this PEA will assist the Army in complying with new Congressional notification requirements, when the Army plans to reduce more than 1,000 Soldiers at an installation. The Budget Priorities and Choices document states that the Army plans to inactivate at least eight BCTs[3]. BCTs are a fundamental building block of the Army and represent the largest units that might be inactivated at Army installations. Many smaller units, some associated with these BCTs would also face possible inactivation. At the same time, the Army wants to avoid a "hollowing of the force". This would be a force whose structure is preserved, but a force that cannot be adequately equipped or trained, nor could it

[2] Fiscal year runs from October 1 to September 30.

[3] The Budget Priorities and Choices document also states that there will be delays in procurement of new equipment and attempts to slow the growth of costs related to personnel. These initiatives are not considered in this PEA analysis because specific proposals are not known at this time, and because these initiatives would not have immediate environmental impacts that could be evaluated at the programmatic level.

credibly respond to national security threats. As the Army gets smaller, actual units will be inactivated or reconfigured. This process will start with the basic building block of the Army, the BCT. The Army's modular structure and the function of BCTs are explained in Section 1.4.1. As stated above, the cornerstone of the Army's restructuring will be the inactivation of at least eight BCTs.

It is important to remember that the Soldiers in these units would not be discharged from the Army when their units are eliminated. Instead, some would leave the Army through the normal course of events, to include retirement, and others would be reassigned to other units.

This PEA looks at major adjustments that are tied to specific installations. There are many other possible reductions that will come into play as the Army and the DoD make adjustments between now and 2020. All Army installations, even the smallest, will likely have reductions in Soldier-strength. These reductions are also likely to lead to corresponding reductions in the numbers of trainees and students in Army schools, as overall training requirements diminish. There could also be reductions in the number of civilian employees at most Army installations.

The changes to the Army will be made gradually, and will be subject to periodic adjustment as national defense requirements are periodically reassessed. This PEA provides Army decision makers with an analysis of the environmental and socioeconomic impacts associated with the proposed realignment the Army's force structure by FY 2020.

In the 21st Century Strategic Guidance, the DoD introduced the term "Joint Force of 2020." The date indicates a goal for achieving the long-range transformation outlined in the strategy. The Chief of Staff of the Army (CSA) issued "Marching Orders" that stated as a goal, "Develop the force of the future, Army 2020 as part of Joint Force 2020 – a versatile mix of capabilities, formations, and equipment." Army planners have also begun using the term "Army 2020" to reflect our participation in the joint transformation and as a way to represent the process by which the Army will transform between FY 2013 and FY 2020. This PEA, therefore, uses "Army 2020" as the title of its Proposed Action.

1.2 Purpose and Need of the Proposed Action

The purpose of the Proposed Action is to shape the Army to meet changing mission requirements and to do so in accordance with budgetary constraints. The President stated that we must "meet the challenges of this moment responsibly and … emerge even stronger in a manner that preserves American global leadership, maintains our military superiority and keeps faith with our troops, military Families, and veterans[4]". The President concluded: "The fiscal choices we face are difficult ones, but there should be no doubt – here in the United States or around the world – we will keep our Armed Forces the best-trained, best-led, best-equipped fighting force in history. In a changing world that demands our leadership, the United States of America will remain the greatest force for freedom and security that the world has ever known."

According to the 21st Century Strategic Guidance, the missions of the United States (U.S.) Armed Forces are:

- ***Counter Terrorism and Irregular Warfare.*** Acting in concert with other means of national power, U.S. military forces must continue to hold al-Qa'ida and its affiliates and adherents under constant pressure, wherever they may be. *Achieving our core goal of disrupting, dismantling, and defeating al-Qa'ida and preventing Afghanistan from ever being a safe haven again will be central to this effort.* As U.S. forces draw down in Afghanistan, our global counter terrorism efforts will become more widely distributed and will be characterized by a mix of direct action and security force assistance. Reflecting

[4] President's Guidance, Jan. 3, 2012

lessons learned of the past decade, we will continue to build and sustain tailored capabilities appropriate for counter terrorism and irregular warfare. We will also remain vigilant to threats posed by other designated terrorist organizations, such as Hezbollah.

- ***Deter and Defeat Aggression.*** U.S. forces will be capable of deterring and defeating aggression by any potential adversary. *Credible deterrence results from both the capabilities to deny an aggressor the prospect of achieving his objectives and from the complementary capability to impose unacceptable costs on the aggressor.* As a Nation with important interests in multiple regions, our forces must be capable of deterring and defeating aggression by an opportunistic adversary in one region even when our forces are committed to a large-scale operation elsewhere. Our planning envisages forces that are able to fully deny a capable state's aggressive objectives in one region by conducting a combined arms campaign across all domains – land, air, maritime, space, and cyberspace. This includes being able to *secure territory and populations and facilitate a transition to stable governance on a small scale for a limited period using standing forces and, if necessary, for an extended period with mobilized forces*. Even when U.S. forces are committed to a large-scale operation in one region, *they will be capable of denying the objectives of – or imposing unacceptable costs on – an opportunistic aggressor in a second region.* U.S. forces will plan to operate whenever possible with allied and coalition forces. Our ground forces will be responsive and capitalize on balanced lift, presence, and prepositioning to maintain the agility needed to remain prepared for the several areas in which such conflicts could occur.
- ***Project Power Despite Anti-Access/Area Denial Challenges.*** In order to credibly deter potential adversaries and to prevent them from achieving their objectives, the U.S. must maintain its ability to project power in areas in which our access and freedom to operate are challenged. In these areas, sophisticated adversaries will use asymmetric capabilities, to include electronic and cyber warfare, ballistic and cruise missiles, advanced air defenses, mining, and other methods, to complicate our operational calculus. Other countries will continue to pursue asymmetric means to counter our power projection capabilities, while the proliferation of sophisticated weapons and technology will extend to non-state actors as well. *Accordingly, the U.S. military will invest as required to ensure its ability to operate effectively in anti-access and area denial environments.* This will include implementing the Joint Operational Access Concept, sustaining our undersea capabilities, developing a new stealth bomber, improving missile defenses, and continuing efforts to enhance the resiliency and effectiveness of critical space-based capabilities.
- ***Counter Weapons of Mass Destruction.*** U.S. forces conduct a range of activities aimed at preventing the proliferation and use of nuclear, biological, and chemical weapons. These activities include implementing the Cooperative Threat Reduction (Nunn-Lugar) Program, and planning and operations to locate, monitor, track, interdict and secure weapons of mass destruction (WMD) and WMD-related components and the means and facilities to make them. They also include an active whole-of-government effort to frustrate the ambitions of nations bent on developing WMD, to include preventing Iran's pursuit of a nuclear weapons capability. In partnership with other elements of the U.S. Government, DoD will continue to invest in capabilities to detect, protect against, and respond to WMD use, should preventive measures fail.
- ***Operate Effectively in Cyberspace and Space.*** Modern Armed Forces cannot conduct high-tempo, effective operations without reliable information and communication networks and assured access to cyberspace and space. Today, space systems and their supporting infrastructure face a range of threats that may degrade, disrupt, or destroy assets. *Accordingly, DoD will continue to work with domestic and international allies and*

partners and invest in advanced capabilities to defend its networks, operational capability, and resiliency in cyberspace and space.

- ***Maintain a Safe, Secure, and Effective Nuclear Deterrent.*** As long as nuclear weapons remain in existence, the U.S. will maintain a safe, secure, and effective arsenal. We will field nuclear forces that can, under any circumstances, confront an adversary with the prospect of unacceptable damage, both to deter potential adversaries and to assure U.S. allies and other security partners that they can count on America's security commitments. *It is possible that our deterrence goals can be achieved with a smaller nuclear force,* which would reduce the number of nuclear weapons in our inventory as well as their role in U.S. national security strategy.
- ***Defend the Homeland and Provide Support to Civil Authorities.*** U.S. forces will continue to defend U.S. territory from direct attack by state and non-state actors. We will also come to the assistance of domestic civil authorities in the event such defense fails or in case of natural disasters, potentially in response to a very significant or even catastrophic event. Homeland defense and support to civil authorities require strong, steady state force readiness, to include a robust missile defense capability. Threats to the homeland may be highest when U.S. forces are engaged in conflict with an adversary abroad.
- ***Provide a Stabilizing Presence.*** U.S. forces will conduct a sustainable pace of presence operations abroad, including rotational deployments and bilateral and multilateral training exercises. These activities reinforce deterrence, help to build the capacity and competence of U.S., allied, and partner forces for internal and external defense, strengthen alliance cohesion, and increase U.S. influence. A reduction in resources will require innovative and creative solutions to maintain our support for allied and partner interoperability and building partner capacity. *However, with reduced resources, thoughtful choices will need to be made regarding the location and frequency of these operations.*
- ***Conduct Stability and Counterinsurgency Operations.*** In the aftermath of the wars in Iraq and Afghanistan, the U.S. will emphasize non-military means and military-to-military cooperation to address instability and reduce the demand for significant U.S. force commitments to stability operations. U.S. forces will nevertheless be ready to conduct limited counterinsurgency and other stability operations if required, operating alongside coalition forces wherever possible. Accordingly, U.S. forces will retain and continue to refine the lessons learned, expertise, and specialized capabilities that have been developed over the past 10 years of counterinsurgency and stability operations in Iraq and Afghanistan. *However, U.S. forces will no longer be sized to conduct large-scale, prolonged stability operations.*
- ***Conduct Humanitarian, Disaster Relief, and Other Operations.*** The Nation has frequently called upon its Armed Forces to respond to a range of situations that threaten the safety and well-being of its citizens and those of other countries. U.S. forces possess rapidly deployable capabilities, including airlift and sealift, surveillance, medical evacuation and care, and communications that can be invaluable in supplementing lead relief agencies, by extending aid to victims of natural or man-made disasters, both at home and abroad. DoD will continue to develop joint doctrine and military response options to prevent and, if necessary, respond to mass atrocities. U.S. forces will also remain capable of conducting non-combatant evacuation operations for American citizens overseas on an emergency basis. The aforementioned missions will largely determine the shape of the future Joint Force. The overall capacity of U.S. forces, however, will be based on requirements that the following subset of missions demand:

counter-terrorism and irregular warfare; deter and defeat aggression; maintain a safe, secure, and effective nuclear deterrent; and defend the homeland and support civil authorities.

In addition to the 21st Century Strategic Guidance referenced above, source documents referenced in this section include the National Security Strategy (NSS, 2010), Defense Strategic Guidance (DSG) (Jan, 2012), the National Military Strategy (NMS, 2011), the QDR (2010), and the Army Campaign Plan. Army 2020 realignment must meet the requirements defined in these guiding national security and defense policy documents, which lay the framework for the Army mission and how the U.S. will utilize its military to deter conflict and shape the global security environment. While the documents above define the Army's requirements to take action from an organizational perspective, this section also discusses the needs of the Army from a unit level perspective, and requirements to maintain training readiness and Soldier and Family quality of life.

The need for the Proposed Action is derived primarily from the Army's need to meet strategic security and defense objectives while balancing manning, training, equipping, stationing, and deployment and readiness activities with reduced levels of funding and personnel. The intent of Army 2020 rebalancing is to maximize operational readiness while preparing to meet national security objectives with potentially reduced levels of resourcing. This requires the Army to prioritize among force structure, programs, and operations while strategically moving forward to preserve and maintain mission capabilities.

The need for the Proposed Action focuses on four primary areas:

- ***Matching Army Force Structure and Capabilities with Mission Requirements.*** The Army must determine the best mix of capabilities and stationing concepts to achieve the greatest degree of effectiveness to carry out national security priorities. The DSG, NSS, and NMS provide a framework which directs Army mission requirements and contingency planning. The Army must be able to meet the Nation's security and defense policy objectives as defined in these documents. The Army Campaign Plan is the Army's guiding document for managing operational and generating forces (See Section 1.2.1.2) and carrying out recommendations put forth in the QDR.
- ***Sustaining Force Readiness.*** Sustaining the force entails ensuring that the Army consists of enough Soldiers to support mission requirements abroad, while providing enough time to units at home station to train and maintain equipment. Striking the proper balance of these activities is critical to ensure a professional, well-trained, and well-equipped force can consistently meet unit readiness standards and successfully accomplish national security and defense missions.
- ***Preserving Soldier and Family Quality of Life and the All-Volunteer Force.*** Maintaining a long-term sustainable balance between operational activities and maintaining a quality of life for Soldiers and their Families is critical to maintaining Army capabilities. Balancing operations and deployments with quality of life reduces stress placed on individual Soldiers and their Families and allows the Army to more effectively manage the all-volunteer force. In turn, this encourages Soldier retention and attracts qualified new recruits making the Army a more effective and capable organization.
- ***Adapting the Force to Reduce Army Expenditures.*** In order to support increased national security posture following the September 11, 2001 terrorist attacks, the DoD budget increased by approximately 119 percent from FY 2001 to FY 2010 (Sustainable Defense Task Force, 2010). During this timeframe, the DoD achieved many of the Nation's critical security objectives to include disrupting terrorist organizations and securing the U.S. from direct attack. In May 2010, an updated NSS was released that

recognizes that current levels of DoD funding must be re-evaluated and adjusted to take into account a sustainable balance of current security priorities and the broader threats of fiscal imbalance. The 2011 Budget Control Act requires DoD to reduce expenditures by $487 billion over the next 10 years. As the 21st Century Strategic Guidance points out, deficit reduction through a lower level of defense spending is itself a national security imperative. The NSS broadly summarizes the need to balance security priorities and spending priorities:

> *At the center of our efforts is a commitment to renew our economy, which serves as the wellspring of American power… Rebuilding our economy must include putting ourselves on a fiscally sustainable path. As such, implementing our national security strategy will require a disciplined approach to setting priorities and making tradeoffs among competing programs and activities. Taken together, these efforts will position our nation for success in the global marketplace, while also supporting our national security capacity—the strength of our military, intelligence, diplomacy and development, and the security and resilience of our homeland.*

In his Congressional testimony, the CSA summarized part of the need for implementing Army 2020*:*

> *Our Army must remain a key enabler in the Joint Force across a broad range of missions, responsive to the combatant commanders and maintain trust with the American people. It's my challenge to balance the fundamental tension between maintaining security in an increasingly complicated and unpredictable world, and the requirements of a fiscally austere environment. The U.S. Army is committed to being a part of the solution in this very important effort* (General Odierno, 2011).

Finally, the 21st Century Strategic Guidance stated:

> *The balance between available resources and our security needs has never been more delicate. Force and program decisions made by the Department of Defense will be made in accordance with the strategic approach described in this document, which is designed to ensure our Armed Forces can meet the demands of the U.S. National Security Strategy at acceptable risk.*

1.2.1 Matching Army Force Structure and Capabilities with Mission Requirements

The Army is a land-based military force that is organized, trained, and equipped to protect the Nation's global security interests and provide for national defense. The Army does this primarily through prompt intervention and sustained combat, peacekeeping enforcement, and support and stability operations in key regions of interest defined by national strategic policies and objectives. As Commander in Chief of the Armed Forces, the President, in conjunction with his security advisors, promulgates and defines national security and defense policy. Using these policies as strategic guidance, military commanders conduct contingency planning to ensure that their forces are able to respond to crises, shape the global security environment, and implement security and defense policies in their regions of interest. The Army is responsible for the implementation of national security and defense policy as outlined in these over-arching security and defense policy documents.

The President establishes the Nation's goals and objectives for promoting secure global conditions and for shaping of the global security environment. The NSS establishes the policy goals and objectives that begin to shape mission requirements for the DoD and DA. The 2010 NSS *National Security Strategy* reaffirmed America's commitment to retaining its global leadership role and defined our enduring national interests to secure U.S. citizens, support a strong economic system, and work with allies and partners to promote peace and security while addressing global security challenges. The NSS provides direction and guidance to inform DoD and DA Commanders and planners in establishing a framework for formulation of the National Defense Strategy.

In addition to the NSS, the President and Secretary of Defense issued additional national security strategy guidance in January 2011. The 21st Century Strategic Guidance stated that "The DoD will manage the force in ways that protect its ability to regenerate capabilities that might be needed to meet future, unforeseen demands, maintaining intellectual capital and rank structure that could be called upon to expand key elements of the force." Thus, the Army and other service branches will ensure that the training force required to generate trained and ready Soldiers remains intact to accomplish necessary training missions.

Analyses in the QDR pointed emphatically to two overarching conclusions. The first is that U.S. forces would be able to perform their missions more effectively—both in the near-term and against future adversaries—if they had more and better key enabling capabilities at their disposal. These enablers include rotary-wing aircraft, unmanned aerial systems (UAS), intelligence analysis and foreign language expertise, and tactical communications networks for ongoing operations, as well as more robust space-based assets, more effective electronic attack systems, more resilient base infrastructure, and other assets essential for effective operations against future adversaries.

The second theme to emerge from QDR analyses is the importance of ensuring that U.S. forces are flexible and adaptable so that they can confront the full range of challenges that could emerge from a complex and dynamic security environment. The recommendations of the QDR will accelerate the evolution of our Armed Forces toward a mix of activities and capabilities better suited to the demands of the emerging security environment. To implement QDR recommendations, the Army must reconfigure the numbers and types of combat and combat support forces and adjust unit equipping strategies and acquisition programs.

Specific QDR recommendations include:

- Enhancing capabilities for domain awareness and cyber security;
- Accelerating the development of standoff radiological/nuclear detection capabilities;
- Fielding faster, more flexible consequence management response forces including chemical, biological, radiological, nuclear, and high-yield explosives response forces;
- Increase the availability of rotary-wing assets to enable a more expeditionary force;
- Expand manned and unmanned aircraft systems for intelligence, surveillance, and reconnaissance;
- Expand intelligence, analysis, and targeting capacity;
- Increase Special Operations Force assets to include logisticians, communications assets, information support specialists, forensic analysts, and intelligence experts;
- Increase counter-insurgency capabilities, stability operations capabilities, and counter-terrorism competency and capacity in general purpose forces;
- Expand civil affairs capacity; and
- Build the Security Capacity of Partner states.

1.2.1.1 National Military Strategy

The purpose of the NMS is to provide the ways and means by which the military will advance enduring national interests as explained in the 2010 NSS and accomplish the defense objectives in the 2010 QDR. Those national military objectives are:

1. ***Counter Violent Extremism.*** The Nation's strategic objective is to disrupt, dismantle, and defeat al-Qa'ida, its affiliates, and other extremist organizations that resort to violence and to prevent their organization and re-establishment.
2. ***Deter and Defeat Aggression.*** This military objective includes the dissuasion, deterrence, and defeat of organizations and states that seek to harm the U.S. and its citizens directly.
3. ***Strengthen International and Regional Security.*** A secure international system requires collective action. The U.S. has an interest in broad-based and capable partnerships with like-minded states. This objective seeks to strengthen security relationships with traditional allies and friends, developing new international partnerships, while working to increase the capabilities of our partners to contend with common challenges.
4. ***Shape the Future Force.*** The DoD and Army strategy is focused on fielding a modular, adaptive, general purpose force that can be employed in the full range of military operations. The Army, working with Joint Forces partners, will improve its ability to surge on short notice, deploy agile command and control systems, and be increasingly interoperable with other U.S. Government agencies. The Army will continue to focus on becoming more expeditionary in nature with a smaller logistical footprint in part by reducing large fuel and energy demands. The Joint Force must ensure access, freedom of maneuver, and the ability to project power globally through all domains. While implementing Army force reductions, it will be critical that the Army maintain a tailorable mix of networked organizations that can operate on a rotational basis with joint service and multinational coalitions. In accordance with new defense priorities, the Army of 2020 must have a versatile mix of formations and equipment that is lethal, agile, adaptable, and responsive. As the Army undergoes this transition, it will prioritize force structure and Joint Force assets to focus on the Pacific Region and Middle East to fulfill the Nation's strategic defense priorities. As the Army repostures and realigns, it will continue to improve its cyberspace and cyber defense capabilities.

1.2.1.2 Army Campaign Plan and Transformation

The Army Campaign Plan serves as the Army's roadmap to implementing the goals and objectives put forth in the QDR and its overarching planning document that guides Army Transformation. To implement decisions made in the QDR, senior Army leadership is responsible for developing and managing the Army's force structure. The process of Army force management is not a static one; force management decision making is an evolving process that is based on changing global conditions and mission requirements. As mission requirements increase or decrease, Army leadership has recognized the need to re-evaluate the size and unit composition of the modular force. This evaluation and determination to change the size or structure of the modular force will take mission requirements into account and will build on previous decisions that direct the Army to transform to a modular force.

1.2.1.3 Summary of Strategic Requirements

The policies and guidance put forth in strategic defense documents provide directives and explicit guidance for the Army to adjust its capabilities to project power rapidly to prevent, deter,

or defeat the actions of those who would do the Nation harm while maintaining stability in key regions of interest. Effective deterrence requires that those who would undermine U.S. security have awareness that U.S. defense forces can credibly act to halt those activities that threaten U.S. national security. Rapid power projection to respond to the wide range of potential contingencies present in an increasingly complex global security environment is a foundational capability needed to support national security. The Army remains committed to its strategic goal of having the capability to deploy a BCT anywhere in the world within a few days of notification. This requires advance planning to respond to contingencies in key areas of interest and detailed planning based on a unit's deployment facilities, logistics, and available transportation. Deployment considerations and Combatant Commanders' force requirements assist the Army in selecting stationing locations that can support contingency operations and national defense requirements. As the Army reduces it overall end-strength, the Army must plan and structure its forces to provide the capabilities to implement defense policies and guidance put forth in the NSS, NMS, and QDR.

1.2.2 Sustaining Force Readiness

While at home station, it is critical that Army units retain or develop those skills necessary to deploy and execute their respective mission. Effective training, carried out to a high doctrinal standard, is the cornerstone of operational success. High quality training, which prepares Soldiers for what will be encountered in the operational environment, is essential to ensuring the success of the Nation's strategic defense objectives, to national security, and to the safety of those who serve.

A critical element of need for the permanent stationing of units as part of Army 2020 is ensuring that units can attain high levels of training proficiency to prepare for future missions and deployment abroad. Training and qualifying Soldiers and units typically requires three types of training facilities: individual and crew weapons qualification ranges; live-fire range complexes that allow units to conduct live-fire training simultaneously as one team; and maneuver areas for units to rehearse and train on the full complement of mission essential tasks required by a unit's training doctrine. In addition, to live training, the Army also augments its leader development and unit training strategies with virtual and battle simulations. This training is necessary for Army units to execute a full array of combat, stability, and peace support operations as part of preparations for the full spectrum of potential future operations.

The level of combat readiness of an Army unit is directly related to the availability and capability of its supporting training infrastructure. All modular BCTs require a full suite of supporting training infrastructure to meet individual, crew, and collective unit training requirements to be certified for operational deployments. Unit range requirements are fully articulated along with range specifications and standard designs in Army Training Circular (TC) 25-8 *Army Training Ranges*, which serves as the definitive source document for Army training range requirements. Locations selected for the stationing of Army units as part of the consolidation or realignment of Army units must possess or be able to accommodate the construction of range requirements for the unit so that the unit can adequately train to meet doctrinal training readiness standards.

In addition to adequate firing ranges, installations must have enough combat maneuver space for units to be able to rehearse and execute a full range of combat and peace support operations, and to certify themselves as a deployable unit. TC 25-1 *Training Land* serves as the definitive source document for requirements for maneuver land training.

1.2.2.1 Readiness and Garrison Operations Facilities

When an Army unit is not deployed it requires adequate garrison facilities to conduct routine operations and maintenance to sustain its equipment. Garrison operations ensure the unit is

administratively prepared and functionally equipped to support deployment operations. This requires dedicated administrative office space for its Soldiers, motor pools, vehicle maintenance facilities, weapons armories, and many other administrative facilities needed to ensure successful garrison preparation and maintain operational readiness. The U.S. Army Corps of Engineers (USACE) has designed and implemented a program of standard facilities requirements for Army units. These standards ensure that the Army provides adequate facilities for its units. Stationing sites selected must be able to accommodate unit garrison operations and construction of necessary support facilities, if needed, as an essential component of need for the stationing of new units.

1.2.3 Preserving Soldier and Family Quality of Life and the All-Volunteer Force

Preserving Soldier and Family quality of life and the all-volunteer force are two of the Army's highest priorities and concepts that are inseparably linked. The Army strives to maintain the highest possible quality of life for those who serve by establishing deployment predictability and balancing the timeframes for which Soldiers are deployed away from home station against mission requirements.

Meeting the needs of the Soldiers and their Family members means having access to quality schools, medical facilities, housing, services, and recreation opportunities. In a typical Army Brigade of between 3,500-4,000 Soldiers, approximately 55 percent of Soldiers are married and may be accompanied by more than 1,800 spouses and 3,400 children. Army installations are used not only for military training, but are also the communities where Families remain behind and are supported as members of the Army community where they live. The Army is absolutely committed to providing the highest quality of life that can be attained for the Soldiers and their Families who have endured multiple deployments. Stationing locations considered must have or be able to build housing and living space, schools, and medical facilities, and support the recreational opportunities for the Soldiers and Families. Retaining the all-volunteer force has been defined by the Senior Leadership of the Army as an essential component for sustaining a high quality force capable of implementing the Nation's defense and security needs.

1.2.4 Adapting the Force to Reduce Expenditures

The NSS and NMS increasingly recognize the connection between national economic prosperity and security goals and objectives. The NMS (2011) states that, *"The United States will remain the foremost economic and military power for the foreseeable future, though national debt poses a significant national security risk".* Defense spending rose considerably in response to attacks on the homeland. Defense spending is the largest discretionary component of federal spending (Sustainable Defense Task Force, 2010). Implementing the NSS envisioned by the Army would be aimed at achieving a more balanced and fiscally sustainable path moving forward. It will require a disciplined approach to setting priorities and making tradeoffs among competing programs and activities while focusing on implementing key DoD objectives.

1.3 Ongoing Army Initiatives (Army Modular Forces and Global Defense Posture Realignment)

Decisions that shape the Army 2020 must take into consideration current and ongoing Army initiatives to include the Army Modular Forces (AMF) initiative and the Global Defense Posture Realignment (GDPR) that evaluates U.S. force levels and requirements outside of the U.S. Each of these initiatives is discussed in greater detail below.

1.3.1 Army Modular Forces

For several years, the Army has been implementing the AMF initiative. Transformation under this initiative makes the Army more modern and enables it to deploy to meet evolving

contingencies. The reduction in size of the Army will involve these transforming forces and must be consistent with force modernization. For this reason, a detailed discussion of AMF is appropriate.

As a part of the overall Army transformation effort, the Army has transitioned to a modular or standardized force structure at all levels of its organization. This process of modular standardization has entailed a change to self-contained, logistically supportable brigade-sized units of 3,400-4,200 Soldiers referred to as BCTs. The units within these BCTs are similar in their equipment and manning. The modular initiative allows for greater levels of planning and organizational efficiency.

There are three primary types of BCTs that are designed to be self-contained, deployable, expeditionary units in nature, that can be augmented with other units to support the intent of theater commanders.

- ***Infantry Brigade Combat Team.*** The Infantry Brigade Combat Team (IBCT) consists of approximately 3,400-3,500 Soldiers and 950 wheeled vehicles. The unit is designed for rapid deploy ability, speed, and agility, but lacks firepower, protective armaments, and staying power to sustain engaged conflict against an opposing armored force.
- ***Armored Brigade Combat Team.*** The Armored Brigade Combat Team (ABCT)[5] is composed of M1 Abrams tanks, M2 Bradley fighting vehicles and supporting tracked and wheeled vehicles. When fully manned, the ABCT consists of approximately 3,850 Soldiers. This type of unit has considerable firepower and protective armament, but requires more logistical support to deploy, and lacks the maneuverability and agility of the IBCT. In addition, the ABCT requires more logistics support to sustain its military operations once deployed.
- ***Stryker Brigade Combat Team.*** The Stryker Brigade Combat Team (SBCT) provides the Army with capability that offsets the strategic gaps between the capabilities of the ABCT and IBCT. The SBCT consists of approximately 4,200 Soldiers, 320-330 Stryker vehicles, and 500-600 wheeled support vehicles. The SBCT provides levels of deployability, maneuverability, firepower, communications capability, and armament that allow the unit to accomplish a broad range of operations. Its increased mobility and digital communications capability make the unit ideal for conducting urban and small scale contingency operations.

As part of the implementation of the Proposed Action, the Army is considering changes to the modular structure of these BCTs. Changes could include the addition of another combat maneuver battalion, the addition of an engineering battalion within these BCTs, or additional changes to Combat Support Units included within BCTs. Augmentation of modular BCTs, if pursued, would be intended to enhance the expeditionary capabilities and combat power of the modular BCT to meet a broader array of mission requirements.

In addition to the BCTs that represent the Army's primary ground combat forces; there are five other types of brigades which support the ground operations of the BCT. At a minimum, these supporting brigades consist of a modular standardized headquarters that have fixed manning and equipment requirements. The remaining structure of support brigades, however, is tailorable to the needs of the mission commanders. With the exception of aviation brigades, these units, therefore, have no set number of Soldiers and vehicles.

- ***Fires Brigade.*** The fires brigade uses mounted and towed artillery and Multiple Launch Rocket Systems (MLRS) to provide close support and precision strikes. The brigade

[5] The ABCT was formerly referred to under the Army Modular Forces concept as a Heavy BCT or HBCT. This HBCT, consisting of tanks and other armored mechanized vehicles, is now referred to as an ABCT.

employs artillery within the unit but also can control and direct the fires of other Armed Forces or coalition partners.

- ***Aviation Brigade.*** There are several types of aviation brigades, each with a different function. Aviation Brigades include Combat Aviation Brigades (CABs); Medium and Heavy lift Aviation Brigades, and multi-functional Aviation Brigades. Aviation Brigades typically consist of over 100 helicopters and 2,000 to 3,000 Soldiers.
- ***Battlefield Surveillance Brigade.*** The Battlefield Surveillance Brigade (BfSB) provides reconnaissance, surveillance, target acquisition, and intelligence support to build the common operational picture, and focus the efforts and resources of the Army and its sister services.
- ***Combat Support Brigade (Maneuver Enhancement Brigade).*** The Maneuver Enhancement Brigade (MEB) enables, enhances, and provides freedom of maneuver and engineering support to an Army, joint, or multinational headquarters. The MEB augments maneuver and support brigades with functional assets to provide combat maneuverability and focused logistics across multiple areas of operation and can provide a headquarters to command and control an assigned area of operations including maneuver forces.
- ***Sustainment Brigade.*** The Sustainment Brigade (SUSBDE) consists of a modular headquarters unit of approximately 350 Soldiers and light, medium, and heavy tactical trucks. In addition to this headquarters unit, logistics units are attached in accordance with mission requirements. There is no fixed structure for a SUSBDE, but for the purpose of this analysis we have used 3,500 Soldiers, which is the maximum ceiling of logistics Soldiers in support units going to any installation. The primary mission of the unit is to provide a complete range of logistics support supplies and services to combat BCTs and supporting brigades. Often, this support is in the form of fuel, ammunition, parts, food, and contracting services, to highlight just a few of the many logistical requirements of the BCT.

Each of these brigades is supported by different military skill sets such as military intelligence, communications, or explosives ordnance, to name a few. Each of these skill sets are combined in a precise manner within a BCT or support brigade to provide the right skill sets to meet mission requirements.

In addition to these types of brigades, the Army also has training brigades established for the purpose of preparing Soldiers for assignments to operational units. These brigades are found at U.S. Army Training and Doctrine Command (TRADOC) training centers.

1.3.2 Possible Restructure of Brigade Combat Teams

Even as this transformation process is executed, the Army continues to modernize its forces. The Army has identified, through the last 8 years of conflict, that there is a serious capabilities gap in its modular force structure. TRADOC has evaluated BCT capabilities and identified that BCTs without a 3rd Maneuver Battalion conduct less effective wide area security, combined arms maneuver, and peace support operations. The addition of a 3rd Maneuver Battalion to ABCTs and IBCTs has been a key recommendation raised by BCT Commanders returning from Iraq and Afghanistan.

In addition to BCT capabilities gaps, the Army is evaluating the force structure of engineer units. The Brigade Engineer Battalion (BEB) Force Design Update (FDU) is being studied to address engineer capability gaps in BCTs. The FDU was based on a 2009 Army Capabilities Integration Center Organizational Based Assessment, a May 2009 Maneuver Support Center of Excellence War Fighter Symposium, and concurrent work to inform the Army on how to best redesign

engineer force structure. The FDU directly addresses engineer capability gaps in Command & Control, Route Clearance, Assault Gap Crossing, Assault Breach and Horizontal Construction. The BEB would replace the brigade special troops battalion in IBCTs and ABCTs and adds a Battalion Headquarters in the SBCT. The BEB FDU includes an engineer battalion headquarters, an assault gap crossing/breaching capability, limited horizontal construction, and route clearance capability. As part of the Army 2020 proposal, there may be other unit augmentations, such as additional indirect fires units, reconnaissance elements, and other Combat Support unit changes that occur between now and 2020 based on the need to establish the optimum configuration for the BCT.

1.3.3 Global Defense Posture Realignment

GDPR is another transformation process that will continue as the Army reduces its force structure. National security is enhanced in part by forward based capabilities and forces present in theaters overseas that can quickly undertake military actions when called upon to do so. Although the U.S. will retain forward-positioned forces in the Pacific, Europe, Korea, and other locations, more Soldiers and their units will be relocated to Army installations in the U.S. where increased levels of readiness can be attained at reduced operational costs. Where possible, the U.S. will work with security partners and allies to support operations of common interest. This strategy will enable the Army to restructure in a manner that enhances the efficiency and effectiveness of response to emerging threats while reducing funding requirements. The decisions of GDPR will affect some of the future basing decisions made as part of Army 2020 stationing to the extent that some forces will return to the U.S. from overseas basing locations. This analysis is intended to look at the impacts of decisions to return forces to bases located in the U.S., and not at the impacts of force reductions to host nation locations.

There is a focus on a sustainable pace of rotational deployments to places around the world. The Germany-based 170th Infantry Brigade will be inactivated, followed by the 172nd Separate Infantry Brigade, as part of a broad restructuring of the military forces in Europe that also calls for the inactivation of two U.S. Air Force Squadrons, the eventual inactivation of the Army's V Corps, and the closing of Army garrisons. The Army will now plan for a rotational presence of forces in Europe. This will mean, primarily, that forces in the U.S. will deploy for short-term durations to support operations in Europe.

1.4 Scope of the Analysis

This PEA has been prepared in accordance with the National Environmental Policy Act (NEPA), the regulations issued by the Council on Environmental Quality (CEQ), 40 Code of Federal Regulations (CFR) Parts 1500-1508, and the Army's procedures for implementing NEPA, published in 32 CFR Part 651 Environmental Analysis of Army Actions. This PEA addresses the proposed restructuring of Army forces to adjust the composition and current stationing locations of the Army's forces. Implementing Army 2020 includes evaluating stationing actions at locations within the U.S. in accordance with NEPA regulations. This PEA will provide to the decision maker important information regarding potential environmental and socioeconomic impacts associated with the Proposed Action and alternatives. This information will be used to determine whether an Environmental Impact Statement (EIS) is required, and will also assist in later decisions on specific unit changes. The scope of this PEA is broad and encompasses activities to support Army stationing and overarching facilities plans projected to take place from FY 2013 to FY 2020.

The analysis does not address changes at locations outside of the U.S. The Army has determined installations outside the U.S. fell out of the scope of this PEA as not meeting the purpose and need for the Proposed Action. Army forces outside of the U.S. will continue to be

considered for realignment as part of GDPR, but these decisions represent a different set of stationing decisions with separate factors for consideration.

This PEA looks at those Army installations that have the potential to lose 1,000 or more full-time military employees from FY 2013 to FY 2020, or that have the potential to gain 1,000 or more Soldiers through force restructuring. The 1,000-Soldier/civilian threshold was chosen because it represents a level of increase or reduction at a majority of installations that warrants analysis at the programmatic level. It also represents, in the case of a loss, a number that Army planners thought could produce significant economic impacts. This threshold was recently established by Congress in 10 U.S.C. §993 for reporting of planned reductions of members of the Armed Forces at military installations. The information in this PEA will assist the Army in complying with new Congressional notification requirements, when the Army plans to reduce more than 1,000 Soldiers at an installation.

In general terms, a change in Army federal civilian employees is anticipated to occur in conjunction with Soldier reductions. A decrease from 562,000 to 490,000 uniformed Soldiers (approximately a 12.5 percent reduction) would result in some level of reduction in Army government civilian positions across the Army, though there could be variations at different installations.

This PEA assesses the environmental capacity of Army installations to accommodate force realignment options as part of Army 2020 restructuring. This PEA conducts a broad, programmatic analysis to examine the potential environmental and socioeconomic impacts associated with reducing the end strength of the Army while restructuring the force; therefore, this document is intended to inform senior Army Leadership at the Headquarters, Department of Army (HQDA) level. The programmatic approach is designed to allow for early planning, coordination, and flexibility throughout implementation of the Army growth and restructuring process. This PEA is designed to leverage into multi-year analyses that can assist force managers in making stationing decisions. At the site-specific level, additional analysis, if determined necessary and appropriate to support HQDA decisions, would be conducted to address changes and environmental effects of the implementation of stationing.

As the programmatic decision made at HQDA is implemented, follow-on NEPA documentation may be prepared, as appropriate and necessary, to evaluate the environmental impacts likely to result from alternative means of carrying out stationing decisions. Stationing decisions could include changes in number and type of support units, structural changes to units such as adding a combat maneuver or engineering battalion to modular BCTs, or combinations of these actions at a given stationing location. Broad analysis has been conducted as part of this PEA to determine the environmental and socioeconomic areas of concern, as well as general capacity and baseline conditions of proposed installations. The comparison of current training activities and their impacts on current environmental and socioeconomic conditions, with the proposed stationing activities and their impacts, will provide decision makers the appropriate tools and information to effectively execute Army 2020 changes. Information on these elements is presented in the sections that follow.

The reduction in force structure and end strength being analyzed in this PEA is unconnected to past or future Base Realignment and Closure (BRAC) efforts. The need to consider changes to force structure and reduce the Army's end-strength is being driven by national defense strategy, as well as federal budget considerations. The recent DOD request to seek authorization for one or more additional base closure rounds is not addressed in this PEA. BRAC-related closure and realignment recommendations would only occur after Congress authorized a future BRAC round, and would only occur after a long and thorough analysis. At this time, Congress has not authorized any future BRAC rounds and the Army has not analyzed or developed future BRAC

recommendations. In addition, the determinations made in this PEA and the stationing decisions that may follow do not dictate or preclude recommendations that might be made under a future BRAC process. Finally, BRAC includes its own NEPA requirements to which the Army would be subject if its facilities were involved. The realignments considered in this PEA and any future BRAC recommendations are not "connected" actions for purposes of NEPA.

This NEPA analysis examines installations with their current boundaries. It does not consider possible expansion of land holdings at installations. The process of land acquisition for federal agencies is a lengthy one, requiring multiple approvals, a series of environmental and real estate planning studies, specific Congressional authorization, and Congressional appropriations. Because of these uncertainties, there are no installation expansion actions that are included in the scope of this environmental analysis to accommodate any proposed stationing realignment actions. Fort Polk has an expansion action where acquisition of additional land has begun. But even in that case it is not clear how much land will be acquired, and how it will be used; therefore, even at Fort Polk, the analysis is based on current boundaries.

The Army National Guard (National Guard) and U.S. Army Reserve (Army Reserve) are not included in this analysis. The National Guard and Army Reserve are not expected to have any substantial reductions as part of the transformation to Army 2020. Soldiers in these components are generally not serving full time at installations. They serve at a variety of locations, including many installations not included in this PEA because potential losses at those installations would not exceed 1,000 military employees. There are no locations at which changes in National Guard and Army Reserve strength would cause significant environmental or socioeconomic impacts. Therefore, the limited transformation of the National Guard and Army Reserve to Army 2020 was not included in this analysis.

1.5 Public Involvement

As part of the NEPA process, the Army has made this Final PEA and Draft Finding of No Significant Impact (FNSI) available to the public and interested stakeholders. The Notice of Availability (NOA) of the Draft FNSI was published in the *Federal Register*, announced nationally in *USA Today*, and locally by Army public affairs specialists. The public will be given 30 days to comment on this PEA and Draft FNSI prior to the signing of the FNSI. Public comments will be made part of the administrative record and will be considered in the preparation of the Final FNSI.

This PEA is available electronically on the U.S. Army Environmental Command website http://aec.army.mil/usaec/nepa/topics00.html for your review. There will be a 30-day waiting period prior to the signing of a Final FNSI. Please direct requests for further information on this PEA/Draft FNSI and comment submissions to Public Comments USAEC, Attn: IMPA-AE (Army 2020 PEA), 2450 Connell Road (Bldg 2264), Fort Sam Houston, Texas 78234-7664.

1.6 Army Decision Making Process

The Army's decision maker will consider all relevant environmental information and public issues of concern associated with this PEA. In addition to environmental impacts discussed in this PEA, the decision maker will also consider several non-environmental factors critical to a final force structure decision, as discussed below. One such factor will be socioeconomic impacts.

The socioeconomic impacts analyzed in this PEA are of particular concern to the Army. Socioeconomic impacts analyzed within this PEA may approach or exceed significance thresholds. CEQ and Army NEPA regulations, however, do not require preparation of an EIS when the *only* significant impacts are socioeconomic. The CEQ's regulation states that "economic or social effects are not intended by themselves to require preparation of an

environmental impact statement" [40 CFR 1508.14]. In the same vein, the Army's NEPA regulations do not require preparation of an EIS for realignment or stationing actions where the only significant impacts are socioeconomic, with no significant biophysical impact [32 CFR 651.42(e)]. Absent significant biophysical environmental impacts, the exceedance of significance thresholds for socioeconomic impacts will not require the Army to issue a Notice of Intent to prepare an EIS.

The decision maker will consider both the environmental and socioeconomic impacts analyzed in this PEA, along with all other relevant information, such as public issues of concern rose during the comment period, prior to making a final decision. If the decision maker determines that there are no significant environmental impacts, that decision will be documented in the Final FNSI, which will be signed no earlier than 30 days from the publication of the NOA of this PEA and Draft FNSI in the *Federal Register*. The Army may initiate a Notice of Intent for an EIS if new information warrants the need for additional analysis of potentially significant environmental impacts.

1.6.1 Decisions to be Made

It is important to understand the programmatic nature of both the action alternatives analyzed in this PEA and the stationing decisions to be made by the Army over the next 8 years. This PEA looks at possible losses and gains at 21 installations using the greatest anticipated possible upper and lower population changes. This does not mean that these losses or gains will actually occur. This PEA, for instance, will look at far more Soldier losses than would likely occur at most installations. These scenarios, however, are being evaluated as this PEA is a long-term planning document that must take into account the possibility of future force realignments and reductions over the course of the next 8 years; therefore, a broad range of stationing growth and reduction numbers were utilized to support this analysis and future decision-making, even though the Army does not anticipate the extent of force structure changes described by the alternatives. This PEA process, however, will provide the Army with an understanding as to whether changes within the ranges analyzed in this PEA will cause significant impacts to the human environment.

The Final FNSI is not anticipated to identify the specific installations at which losses and gains will occur. The specific changes in force structure required over the remainder of the decade have not been identified sufficiently at this time to designate installations and units to be affected. The Army does not project that it will be able to make final decisions on its force structure until sometime in 2013. Army force requirements will change over time, and are subject to modification and even reversal as time goes on. Factors producing this uncertainty include world politics and an evolving threat to American interests as well as fluctuating economic conditions.

Army force structure decisions are subject to issues of funding, evolving mission requirements, and other factors that are not fully known at this time. Thus, this PEA process will determine whether either any of the action alternatives will result in significant impacts. The Army will then be able to make decisions on BCT reorganization, with supporting information from this PEA analysis at the appropriate time. This PEA analyzes the potential environmental effects of the entire program of Army 2020 transformation.

Several additional factors will be taken into account in future stationing decisions, in addition to the environmental issues presented in this PEA. These factors include:

- ***Operational.*** The Army must take full advantage of training resources, deployment infrastructure, and facilities to support readiness and quality of life of Soldiers and their Families. Units must be aligned with appropriate oversight and leadership by senior

headquarters, and command and control. Training land considerations include availability of maneuver land and training facilities, indirect fire (artillery) capability, and range capacity and sustainability, as well as airspace. It also involves deployment infrastructure and the ability to rapidly transport troops and equipment from air and sea port locations.

- ***Cost.*** The Army must seek to reduce and contain costs, to include military construction investments, systems acquisition, operational costs, and requirements.
- ***Strategy and Geographic Distribution.*** The Army must align force structure with planning guidance and the DOD priority to focus on the Pacific Region along with other national defense priorities. Army forces must be aligned in such a way as to be able to respond to a broad array of global contingencies, if called upon to do so.
- ***Investment and Regeneration.*** This factor seeks to preserve options to quickly expand the Army, when and if necessary in the future, to support future national defense needs. In February, 2012, the Army submitted its 2012 annual posture statement to the U.S. Congress. This posture statement presents the Army's strategy for reshaping and reducing its forces while preserving critical operational capabilities. Two critical concepts for Army restructuring are "investment" and "regeneration". Regeneration involves structuring and pacing reductions in such a way that preserves the ability of the Army to regenerate, mobilize, and surge troops for future contingency operation, as needed. Investment involves managing the force in ways to protect the Army's ability to quickly train and generate a larger force in the future by preserving enough of the training force and assets to quickly stand up a larger trained and ready force.
- ***Soldier and Family Quality of Life.*** Facilities for Soldier and Family well-being, access to medical care schools, and recreation opportunities, and administrative and living facilities are key considerations. Installation stationing locations must have the facilities, or ability to construct new facilities, to support a high quality of life for Soldiers and their Families.

2 DESCRIPTION OF THE PROPOSED ACTION

2.1 Introduction

This section provides a description of the Proposed Action and those supporting actions the Army would undertake to implement force restructuring. The Proposed Action addresses the need to reduce Army end-strength and realign the Army's current force structure to meet national security and defense mission requirements, within budget constraints. To enhance the configuration of its available forces, the Army would engage in four primary activities to ensure that the Proposed Action could meet needs set forth in Chapter 1 of this PEIS. Activities the Army would implement that are anticipated to have an environmental and/or socioeconomic impact at stationing locations, include stationing (unit activation, realignment, and inactivation), garrison construction and demolition, live-fire training, and maneuver training. This section describes the Proposed Action and activities associated with unit stationing actions.

2.2 Proposed Action

The Army's Proposed Action is to reduce and realign its forces; both uniformed military and federal civilian Army employees, in order to meet current and future national security and defense requirements. The reductions and realignments will take place between FY 2012 and FY 2020. As part of the Proposed Action, it is anticipated that the Army's force structure would be reduced to 490,000 active component Soldiers.

The Proposed Action involves the stationing of units in a manner that supports 21st Century Strategic Guidance, the NSS, QDR, NMS, and Army Campaign Plan. The Proposed Action will implement defense guidance and recommendations, sustain unit equipment and training readiness, and preserve a high quality of life for Soldiers and their Families. Army 2020 realignment would allow for the adjustment of the composition of its forces to meet force requirements in high demand military occupational specialties areas while rebalancing the number and types of units in lower priority military occupational skill areas. The implementation of Army 2020 realignment will be necessary to operate on a reduced budget, while allowing the Army to field a smaller force that can meet the mission requirements of the current and future global security environment.

The realignment must modify the force in accordance with Army transformation, sustain unit equipment and training readiness, preserve Soldier and Family quality of life, and reduce operational costs while maintaining critical capabilities. To fully implement the Proposed Action, units must be stationed at locations that will be able to accommodate unit requirements for training, garrison and maintenance activities, and preserve Soldier and Family quality of life. In addition, final stationing locations must support the strategic deployment and mobilization requirements of the Nation's Combatant Commanders to ensure they will have the forces necessary to support regional contingency operations and planning requirements.

2.3 Site Specific Actions Required to Implement the Proposed Action

Alternatives for implementing the Proposed Action will ultimately involve a combination of four specific actions that must be integrated and synchronized by the Army to support the execution of the Proposed Action. These activities are necessary components of the Proposed Action for meeting unit stationing and realignment requirements. The actions are separated out in this section and discussed in detail to facilitate an understanding of the primary activities taking place that are projected to result in impacts to the natural and human environment and lead to direct, indirect, and cumulative effects. Essential activity groups required to implement the Proposed Action are stationing (activations, realignments, and inactivations), garrison

construction and demolition, live-fire training, and maneuver training. A brief description of each activity is provided in the following sections.

2.3.1 Force Management

The primary method by which the Army manages its force structure to ensure that it is fielding an appropriately sized force of proper capability and configuration is through the Army's Total Army Analysis (TAA) process. The TAA is a multi-phased force structure review process that generates the force requirements and recommended resourcing in all three components (Active, Army Reserves, National Guard) necessary to support execution of the National Security and Military strategies, given resource constraints and end-strength guidance and limits from Congress. The TAA results are used to develop the Army's future force requirements. Based on the results of the TAA analysis, the Army routinely activates, inactivates, and realigns units to achieve better command and control, operational effectiveness, and increased efficiencies. TAA decisions in FY 2012 shaped and informed by this analysis will influence future stationing adjustments from FY 2013 to FY 2018. The Army would implement TAA force structure recommendations as part of the Proposed Action.

In January 2011, the Secretary of Defense announced that the Army would move forward with a force reduction of 27,000 Soldiers by 2015. In January 2012, the Secretary of Defense announced that the Army would further reduce its forces to 490,000 active duty Soldiers. To support this announcement and other future anticipated force reductions, the Army will need to inactivate a variety of units and consolidate other units for increased organizational efficiency. The TAA process will be used to conduct an assessment of how to restructure the force.

The Army has made the strategic decision that a majority of force reductions will occur in its operational forces, and not to those generating forces that train Soldiers for future operational requirements. This strategy will enhance the Army's ability to expand rapidly to meet future mission requirements. This strategy influences which installations are being considered in this programmatic analysis (see Section 3.4). This is why installations such as Army Materiel Command depots and arsenals, reserve centers, and major training centers are not part of this analysis. These locations do not have large concentrations of operational units that are the focus of Army realignment and potential reductions.

2.3.2 Garrison Construction & Demolition

The Army has developed a facilities strategy, "Army Facility Strategy 2020", which outlines a broad plan for facilities management to support the Army's transition. Implementation of this strategy is part of the Proposed Action. The strategy provides the Army with an enterprise approach to enhance readiness and lower costs to build the best force for the Army of 2020 with the right facilities configured in the most resource efficient manner. As part of the strategy, the Army would look to maximize the use of existing space, with only limited new construction to support unit activations and realignments. In addition, the Army will consider retention of relocatable facilities (approximately 3,000 in Army inventory) to provide flexibility as force structure reductions are refined. Facilities not in full use or at locations where units are inactivated could be re-purposed, demolished, or out granted to other Services (Navy, Air Force, Marines) or other federal agencies to increase efficiency of facility operations. In addition, under the concept of reversibility, the Army may retain facilities in a 'warm base'[6] status so that they can be used if force reductions are reversed and new units arrive at the installation. Limited built

[6] Warmbasing refers to the retention of facilities at a temperature and humidity that allows for maximum preservation, prevents moisture damage, while conserving energy and minimizing costs to retain the facility. In a warm climate, for example, this could mean retaining the facility at 85 degrees Fahrenheit and low humidity, while in a cold climate this would mean retaining the facility at 50 degrees Fahrenheit to reduce energy costs.

out of critical facilities would take place, where necessary, to augment existing facilities to support Army realignment.

The Army proposes to take the following actions as part of the Proposed Action:

- Sustain Required Facilities
- Dispose of Excess Facilities
- Build-out Critical Facility Shortfalls

Critical facilities required by Army units include office space for battalion and company headquarters, barracks space for single enlisted Soldiers, Family housing, dining facilities, maintenance shops, parking for vehicles, storage space, and classrooms. The types of facilities required have been determined by Army facilities planners.

The requirements for construction would be based on the type of unit being stationed at a given location and the availability of existing facilities at the installation. Construction requirements for unit stationing actions would be determined at the installation depending on these factors. As part of Army 2020 reduction implementation, older less efficient facilities may be demolished or renovated and existing facilities may be reassigned to better support Army units. Major military construction (MILCON) would only be anticipated as part of Alternative 2 (see Section 3.2) where BCT restructuring is being considered.

2.3.3 Live-Fire Training

Live-fire training is an essential component of Army training and of the implementation of the Proposed Action. To be operationally effective, Soldiers must have the skills and experience necessary to operate and maintain their weapons. Live-fire involves both munitions and explosives that would be used in combat, as well as non-explosive training rounds designed to meet Soldiers' training needs. In order to conduct effective live-fire training, units must have access to a suite of modern range infrastructure to achieve trained and ready status. A listing of Army Training and Qualification Ranges can be found in TC 25-8 *Training Ranges*. As part of force reduction implementation, there would be expected to be more training range capacity to support fewer Army units competing for training ranges and training lands. As part of Alternative 2, some limited range construction may be needed at certain installations to ensure units have the ability to conduct live-fire training qualifications.

2.3.4 Maneuver Training

Army units must conduct "combined-arms" training to ensure that all of the units' capabilities can be integrated and synchronized to execute missions under stressful operational conditions. Maneuver training consists of collective training of the constituent units of the BCT working together to integrate their combined capabilities and skills. Modular BCTs must conduct and rehearse maneuver training at every echelon from platoon through brigade level to ensure they can accomplish their mission-critical tasks. As part of force reduction implementation, there would be expected to be less overall use of training lands and less training maneuver activity across the Army. As part of Alternative 2, some limited increases in maneuver training associated with additional units and BCT restructuring could occur at some locations that would represent an overall increase from current conditions.

Maneuver training is a critical component of unit training that synchronizes the execution of battle tasks and enables units to shoot, move, and communicate on the battlefield. Large-scale battalion and brigade maneuver training events are often the capstone training exercise that tests and certifies units for operational deployments abroad. Maneuver training builds on all of the individual skills that Soldiers possess and tests each echelon of command of the BCT. Platoons, companies, and battalions conduct maneuvers to ensure unit proficiency at each

successive level of Command within a BCT. Army TC 25-1 *Training Land* is the Army's definitive source for defining maneuver training land requirements. As part of the implementation of the Army's Proposed Action, most installations will experience a decrease in environmental impacts from maneuver training activities.

To support unit training, each platoon, company, battalion, and brigade must conduct maneuver events to ensure the operational capabilities of the BCT. Each platoon and company must train up to 5 weeks per year to meet maneuver training requirements. In addition, each battalion must conduct semi-annual maneuvers lasting approximately 3 to 4 weeks each to certify its subordinate units, and each brigade must conduct maneuvers every 12 to 18 months and in advance of operational deployments. Army Field Manual 7-0 *Training Units and Developing Leaders for Full Spectrum Operations* (DA, 2011) lists the operations that must be rehearsed by Army units in combat maneuver training.

2.3.5 Description of Combat Unit Training

2.3.5.1 Introduction

Training is the Army's number one priority for units, and commanders train their units to be combat ready. "Battle Focus" is a concept used to derive training requirements, and units train according to their Mission Essential Task List (METL). This is derived from wartime operational plans (why they fight); specific (to unit) combat capabilities (how they fight); the operational environment (where they fight); directed missions (what they must do); and any external guidance. The Army trains Soldiers in individual skills, units on collective tasks, and different levels of units through multi-echelon training. The Army trains as it fights, as a combined arms team. Training ranges and training lands allow Army units to fire weapons, maneuver as a combined arms team, and incorporate protective measures against enemy actions.

All Soldiers qualify with their individual weapon (rifle or pistol) at least twice annually; crew-served weapons qualification varies by type of unit. This training is usually accomplished at the company level on fixed ranges described in TC 25-8 *Training Ranges.* Weapons system training (Abrams Tank, Bradley Fighting Vehicle, and Attack Helicopter) consists of a series of "tables" and occurs on large range complexes.

All units must establish logistical and command and control operations in the installation's maneuver areas. From those maneuver area locations the units will train on their mission essential tasks. The size of the area, and frequency and duration of the training exercises will vary by type of unit.

Units train to maintain proficiency on key tasks as defined by their METL. Training strategies and events for Army BCTs are described in more detail below.

- ***Armored Brigade Combat Team.***

  Equipment. The ABCT currently consists of approximately 3,800 Soldiers and 55 M1 Abrams tanks and 85 Bradley Infantry fighting vehicles. In addition to these armored tracked combat vehicles, the ABCT also possesses 16 self-propelled 155mm howitzers, tracked earthmoving vehicles, recovery vehicles, and an assortment of other tracked vehicles. The ABCT also has a large number and variety of wheeled-vehicles, to include light tactical trucks, medium trucks, and large cargo and fuel trucks. All vehicles are capable of on-road and off-road maneuver.

  Training. Abrams Tank or Bradley Fighting Vehicle crews in the combined arms battalion practice and qualify on their vehicles on a series of 4 individual gunnery "tables" once every 6 months, and as sections and platoons once every 12 months. A company will complete a Combined Arms Live-Fire Exercise (CALFEX) once every 12 months on

its own or as part of a battalion CALFEX. This training also occurs on large fixed ranges such as the Multi-Purpose Training Range (MPTR) or Multi-Purpose Range Complex (MPRC) that have multiple lanes for mounted maneuver and live-fire target engagements.

The ABCT's smaller subordinate units will train on a specific event as many as 4 times per 12 months; the larger units may train as many as 2 times per 12 months.

- ***Stryker Brigade Combat Team.***

  Equipment. A SBCT currently consists of approximately 4,200 Soldiers, 317 Stryker combat vehicles, 588 wheeled support vehicles, 18 155mm howitzers, and numerous trailers and other pieces of equipment. The Stryker vehicle is an eight-wheeled armored combat vehicle. Each Stryker platform is equipped with a crew served weapon, usually a machine gun, or in the case of the mobile gun system (MGS), a direct fire cannon.

  Training. Stryker unit training involves a mixture of mounted and dismounted tasks. Stryker units, from squad to company also participate in quarterly and semi-annual Live-Fire Exercises (LFXs) that includes all weapons systems on a large and more complex range. Stryker units will train on a specific event as many 4 times per 12 months, the larger units (e.g., battalion and BCT) as many as 2 times per 12 months. Stryker units train to move rapidly over larger operational distances in order to bring infantry forces and their equipment to an objective. Stryker vehicles can move cross-country, but are more likely to move on hardened surfaces for speed and mobility purposes.

- ***Infantry Brigade Combat Team.***

  Equipment. The modular IBCT consists of approximately 3,450 Soldiers and possesses towed M777 155mm artillery, light engineer equipment, and light tactical and medium and large cargo trucks. All vehicles are capable of on-road and off-road maneuver.

  Training. Infantry training is weapons intensive as individual Soldiers, crews, teams, and squads practice and qualify with a variety of weapons. Weapons qualification is a semi-annual requirement, practice firing is completed as time, ammunition, and other resources permit. Infantry units, from squad to company also participate in quarterly and semi-annual LFXs that include all weapons systems on a large and more complex range.

  Infantry units can incorporate airborne, airmobile and air assault operations into their training. Like the ABCT, the IBCT's smaller subordinate units will train on a specific event as many 4 times per 12 months, the larger units such as the battalion may train as many as 2 times per 12 months.

- ***Combat Support and Combat Service Support Units.***

  Equipment. Combat Support and Combat Service Support units consist of units with a variable number of Soldiers, depending on unit type, that support a wide array of functions in the Army. Combat Support and Combat Service Support units consist of military police, engineers, logistics support, medical units and other types of units supporting combat and non-combat functions. These units use a wide variety of vehicles, based in part of the types of units it is supporting and the missions it needs to accomplish. Vehicles used by these units may consist of maintenance vehicles, and light, medium, and heavy cargo trucks of all sizes (e.g., 5,000 gallon fuel trucks and Heavy Equipment Transports [HETs]). Vehicles used by Combat Support and Combat Service Support units are generally capable of on-road and off-road maneuver, but will more often travel on-road.

Training. Combat Support and Combat Service Support units will often establish an operating base in the maneuver areas and train on force protection and conducting combat support and logistical operations in this environment. The training can include repairing vehicles, providing medical treatment, conducting security operations, rehearsing engineering tasks, re-supplying units with petroleum products, rations, and other materials. The operating bases can be large and there is considerable vehicle traffic in and around the base. Like combat units, Combat Support and Combat Service Support units must conduct individual qualification on training ranges to qualify on individual and crew served weapons systems.

3 ALTERNATIVES AND SCREENING CRITERIA

3.1 Introduction

This section discusses the alternatives the Army is considering to implement the Proposed Action. The Purpose and Need described in Chapter 1 provides the context in which to analyze the viability of alternatives. The Purpose and Need define necessary elements of the Proposed Action and allow consideration of alternatives for realignment and restructuring of Army's forces. This section provides a discussion of the alternative selection criteria that the Army used to assess whether an alternative is "reasonable" and carried forward for evaluation in this PEA. The screening criteria were developed based on the Purpose and Need for the Proposed Action set forth in Chapter 1. In addition, this section will discuss criteria used to select candidate installations for stationing actions to support the realignment of the force.

Two Army-wide action alternatives and the "No Action" Alternative have been analyzed for implementation at 21 installation stationing locations.

3.2 Alternatives Carried Forward for Analysis

In addition to the No Action Alternative, two action alternatives have been formulated that take into account the Army's needs for Army 2020 realignment. Common elements to these alternatives include implementing force reductions and Combat Support and Combat Service Support unit realignments from FY 2013 to FY 2020. Both alternatives consider Grow the Army stationing actions that have occurred from FY 2008 to FY 2012 as part of the baseline condition for stationing analysis.

3.2.1 Alternative 1 - Implement Force Reductions: Inactivate Brigade Combat Teams and Realign Combat Support and Service Support Units Between Fiscal Year 2013 and Fiscal Year 2020

Under Alternative 1, the Army would eliminate a minimum of eight BCTs, as well as other Combat Support and Combat Service Support units. Installations would experience force reductions through unit in activations and unit realignments that could also include the relocating of units to other locations. Additionally, the Army would reduce its federal civilian workforce in parallel with a reduced demand for Soldier support services. The structure of BCTs would not change as part of this alternative. Some portion of civilian reductions would be directly associated with Soldier losses, though a majority of civilian reductions would be associated with overall realignment of the workforce across the Army being conducted in order to achieve greater operational efficiencies. Table 3.2-1 presents the potential military employee reductions that could take place as part of Alternative 1 at each installation. These reductions are used as the maximum potential force reduction thresholds for the installations. This PEA looks at the maximum possible thresholds for reductions at its installations that could result in an Army strength considerably below 490,000. Currently, the Army does not envision reducing its forces below this level; therefore, the full extent of the reductions discussed are not anticipated.

Table 3.2-1. Alternative 1: Army 2020 Force Reduction and Combat Support/Combat Service Support Realignment

Installation Name	Potential Population Loss to be Analyzed	Fiscal Year 2011 Army Population[1]	Projected Fiscal Year 2020 Army Population
Fort Benning, Georgia	7,100	39,243	32,143
Fort Knox, Kentucky	3,800	13,665	9,865
Fort Polk, Louisiana	5,300	10,877	5,577
Fort Wainwright, Alaska	4,900	7,430	2,530
Joint Base Elmendorf-Richardson, Alaska	4,300	6,923	2,623
Fort Bliss, Texas	8,000	32,352	24,352
Fort Bragg, North Carolina	8,000	56,983	48,983
Fort Campbell, Kentucky	8,000	32,425	24,425
Fort Carson, Colorado	8,000	25,823	17,823
Fort Drum, New York	8,000	19,079	11,079
Fort Hood, Texas	8,000	47,437	39,437
Fort Riley, Kansas	8,000	20,009	12,009
Fort Stewart, Georgia	8,000	24,622	16,622
Joint Base Lewis-McChord, Washington	8,000	36,777	28,777
Schofield Barracks, Hawai'i	8,000	18,563	10,563
Fort Gordon, Georgia*	4,300	13,864	9,564
Fort Lee, Virginia*	2,400	16,257	13,857
Fort Leonard Wood, Missouri*	3,900	27,213	23,313
Fort Sill, Oklahoma*	4,700	22,444	17,744
Joint Base Langley-Eustis, Virginia*	2,700	9,899	7,199
Fort Irwin, California*	2,400	5,539	3,139

* Non-BCT installation

[1]Populations include: Army military, Army students, Army civilians (Excludes other military service personnel, contractors, and transients); Population reduction numbers include full-time military and civilian projections only. Source of data is the Army Stationing Installation Plan (Feb, 2012).

For each installation with one BCT, Alternative 1 assumes the loss of that BCT (approximately 3,450 for IBCTs, 3,850 for ABCTs, and 4,200 for SBCTs), as well as 30 percent of the installation's non-BCT Soldiers and 15 percent of the civilian workforce. In some instances involving installations with major training missions, the potential loss is lowered slightly. This is because personnel associated with the training mission, referred to as the "generating force," are not expected to decline (see Section 2.1).

For installations with multiple BCTs, Alternative 1 assumes the loss of a BCT, 30 percent of the installation's non-BCT Soldiers, and 15 percent of the civilian workforce. In order to

approximate the maximum likely loss, a total of 8,000 military employees were used for these installations. Application of the formula above could produce a higher figure, but it would be unlikely that any one installation would be selected to sustain a force reduction of more than 8,000 military employees.

For an installation with no BCTs, Alternative 1 assumes a loss of 35 percent of the installation's Soldiers, as well as a loss of up to 15 percent of civilian employees. Analysis of Alternative 1 includes these installations; if the total losses would exceed 1,000 military employees. Other non-BCT installations could experience reductions as part of Army 2020 realignment, but these reductions would not exceed 1,000 military employees. These smaller reductions are outside the scope of this programmatic document and, therefore, are not included in this PEA.

Installations with major training missions would also experience about a 10 percent reduction in Soldiers attending temporary training. These Soldiers are not included in the calculations of losses because of the limited nature of their impacts on communities, community services, and the environment. Most Soldiers attending temporary training are unaccompanied by Family members and do not reside in, or draw services from, the community. Reductions in permanent party Soldiers and Army civilians would be anticipated to affect an estimated 1.52 dependent Family members (children up to the age of 18, and spouses) per service member or civilian. Additional discussion of socioeconomic impacts and methodologies is provided in Section 4.0.

These numbers serve as the upper-bound loss estimate for both Active Component Soldiers and Army civilian employees. It is important to understand that these scenarios represent the maximum potential reduction at these installations and are not currently being proposed by the Army as immediate decisions being made as part of this PEA. Rather, the Army will continue to review and determine how best to structure its forces through the TAA process within the FY 2013 to FY 2020 timeframe, and make decisions to best meet the Army's needs. These decisions will fall within the range of stationing changes evaluated in this PEA.

Force realignment outcomes will be inherently tied to future budget decisions and future national defense requirements. It is also important to remember that the transformation would occur over a number of years and that it would be subject to change during that period because of external events.

3.2.2 Alternative 2 – Implement Alternative 1: Inactivate Additional Brigade Combat Teams and Restructure Brigade Combat Teams to include adding a 3rd Combat Maneuver Battalion

Under Alternative 2, the Army would implement force reductions and realignments discussed as a result of implementation of Alternative 1. In addition, the Army would reduce further the total number of BCTs to provide the additional troops that would be added to the remaining BCT force structure. The implementation of Alternative 2 would result in the inactivation of more BCTs across the Army. The exact number of inactivations would depend on the final force structure designs, number of Soldiers added to each BCT, and number of BCTs that would eventually implement the new force structure design concept. The Army also would restructure BCTs by taking combat maneuver battalions of inactivating ABCTs and IBCTs and adding them to existing ABCTs and IBCTs either at the same location or at other installations. Each realigned combat maneuver battalion would add approximately 700 additional Soldiers per BCT. This alternative would provide those Brigade Commanders with a 3rd combat maneuver battalion to support their operations and enhance the combat power of each BCT. The addition of a combat maneuver battalion to the SBCT is not being considered, since the SBCT, already has three combat maneuver battalions. As part of this alternative, the Army would also restructure its engineering units to add a BEB to each ABCT, IBCT, and SBCT, which would add several hundred more Soldiers to the BCT. There may be other augmentations, such as

additional indirect fire units, reconnaissance elements, and other Combat Support unit changes between now and 2020, based on the need to establish the optimum configuration for the BCT and its supporting elements. For planning purposes, and for purposes of analysis in this document, it is assumed that 1,000 Soldiers would be added to ABCTs and IBCTs and 500 Soldiers would be added to SBCTs. The actual numbers may vary slightly as the force structure analysis continues. The numbers used in this PEA reflect the upper range of possible changes.

As a result of the implementation of Alternative 2, all installations could experience force reductions discussed as part of Alternative 1 in addition to growth from BCT consolidations. Under Alternative 2, changes could include further Soldier and Army civilian reductions, and changes in the numbers of dependents associated with these Soldiers leaving the surrounding community[7]. Dependents of civilian employees may be more likely to stay in the local geographic area. There would also be changes in the temporary student training population at installations. In many cases, these changes would offset any growth of BCT consolidation. Some BCT installations, however, could experience a marginal overall increase in permanent party population as a result of the implementation of Alternative 2. Table 3.2.2 provides an overview of the maximum increase of potential Soldier population gain that would be anticipated to occur to BCT installations as a result of the implementation of Alternative 2.

Table 3.2-2. Installation Gains Resulting from Implementation of Alternative 2

Installation Name	Potential Population Gain to be Analyzed	Fiscal Year 2011 Army Population[1]	Projected Fiscal Year 2020 Army Population
Fort Knox, Kentucky	1,000	13,665	14,665
Fort Polk. Louisiana	1,000	10,877	11,877
Fort Wainwright, Alaska*	1,000	7,430	8,430
Joint Base Elmendorf-Richardson, Alaska	1,000	6,923	7,923
Fort Bliss, Texas	3,000	32,352	35,352
Fort Campbell, Kentucky	3,000	32,425	35,425
Fort Carson, Colorado	3,000	25,823	28,823
Fort Drum, New York	3,000	19,079	22,079
Fort Hood, Texas	3,000	47,437	50,437
Fort Riley, Kansas	3,000	20,009	23,009
Fort Stewart, Georgia	3,000	24,622	27,622
Schofield Barracks, Hawai'i*	1,500	18,563	20,063

*Stryker Brigade Combat Team Stationing Site
[1]Populations include: Army military, Army students, Army civilians (Excludes other military service personnel, contractors, and transients); Population reduction numbers include full-time military and civilian projections only; Source of data is the Army Stationing Installation Plan (Feb, 2012).

[7] The surrounding community is later referred to as the installation region of influence.

The numbers included in Table 3.2-2 assume that ABCTs and IBCTs stationed at Army installations could receive an extra combat maneuver battalion consisting of approximately 700 additional Soldiers. These numbers account for the BEB and other units such as additional indirect fires units, reconnaissance elements, and other critical Combat Support units. The addition of 1,000 Soldiers was determined to be reasonable for locations with a single BCT (500 for the installations with a single SBCT), and 3,000 Soldiers additional authorizations for locations with multiple BCTs. There would be no locations in Alternative 2 that would not experience some level of loss through unit inactivation or realignment; therefore, growth to the levels reflected in Table 3.2-2 is unlikely at most locations. For locations without BCTs, no increase in Soldier population would occur as part of this alternative, so they are not further analyzed as part of this alternative.

BCT restructuring scenarios represent the maximum ceiling of troop increase. No decisions on BCT restructuring have yet been made. The Army will continue to review and determine how best to structure its forces through the TAA process within the FY 2013 to FY 2020 timeframe, and make decisions to best meet the Army's needs. These recommendations will fall within the range of stationing changes evaluated in this PEA. It is important to note that as a result of implementation of Alternative 2, there would still be an overall reduction in Army strength. The gains coming as a result of BCT restructuring would be offset by losses either at the BCT's installations or elsewhere.

Schofield Barracks has a reduced potential for Soldier increases compared to other locations with multiple BCTs; therefore, a reduced number for Soldier growth was considered. At Fort Wainwright (also a SBCT installation), a potential growth of 1,000 Soldiers was used instead of 500 Soldiers because the installation may need to accommodate the stationing of additional Combat Support Units in the future, depending on Army-wide force structure decisions.

Fort Benning, Fort Bragg, and Joint Base Lewis-McChord (JBLM) were not considered under Alternative 2 because of a lack of capacity and facilities to accommodate additional Soldiers in a cost effective manner. Further discussion of these installations and screening criteria is presented in Section 3.4.2.3.

3.2.3 No Action Alternative

The No Action Alternative would retain the Army at a FY 2012 end-strength of about 562,000 Active Duty Soldiers, 358,200 National Guard Soldiers, 205,000 Army Reserve Soldiers, and more than 320,000 DA civilians, as is currently authorized. The No Action Alternative assumes that units will remain stationed where they are currently stationed at the end of FY 2012. Under the No Action Alternative, no additional Army personnel would be realigned or released from the Army to balance the composition of Army skill sets to match current and projected future mission requirements, or to address budget requirements. No BCT restructuring would occur as proposed in Alternative 2, and no unit inactivations would occur. Implementation of the No Action Alternative will not address the Army's needs for force realignment and reduction. The No Action Alternative provides baseline conditions and a benchmark against which to compare environmental impacts from the Proposed Action alternatives. Consideration of the No Action Alternative is also required by CEQ regulations.

3.3 Alternatives Eliminated from Further Review

- ***Permanently Station Brigades at Overseas Host Nation Locations.*** Under the No Action Alternative, existing brigades or their constituent units would be stationed at overseas locations, such as Germany or Korea. This alternative would not adhere to national defense policy or decisions and recommendations put forward in the QDR. These QDR outlines DoD strategies to project power abroad from within the U.S. where

Soldiers have increased levels of force protection and access to training resources. Overseas locations could also be more costly and this would impede the Army's effort to meet budget constraints.

- ***Execute Brigade Combat Team Restructuring (Alternative 2) at Non-Brigade Combat Team Locations.*** Under this alternative, the Army would station existing BCTs at installations that do not currently have one. This alternative would not be cost-effective to implement, as locations which do not currently have a BCT would require a new set of facilities for the unit. Construction of an entirely new set of facilities and infrastructure to support a BCT and their dependents would not meet the purpose and need for the proposed action to realign Army units in a cost effective manner.
- ***Station Brigade Combat Team's 3rd Maneuver Battalions at a Reserve Component Sites.*** Under this alternative, units would be stationed at a Reserve Component Site such as Camp Shelby, Mississippi or Fort Dix, New Jersey. While these installations do possess some of the range infrastructure required to support an Active Duty battalion, the installations' primary mission is to focus on training National Guard and Reserve Component Soldiers on Mission Critical Tasks to prepare them for deployment to support on-going missions. These installations do not possess the garrison infrastructure to support an Active Duty BCT and the infrastructure and services required by their dependents.
- ***Apply a Fixed Percentage Reduction to all Installations.*** Under this alternative, all Army installations would be reduced by a percentage necessary to meet the overall 490,000 end strength goal. The Army's critical capabilities and priorities to meet the future strategic mission requirements would be placed at risk, because key units would not be preferentially preserved. The use of strategic locations would not be maximized and, therefore, would not reflect strategic priorities.
- ***Further Reduce Troop Levels Overseas.*** Under this alternative, force structure would be further reduced overseas as opposed to reductions occurring at installations within the U.S. To a large extent, this alternative is in the process of being implemented, already. In January, 2012, the U.S. Army announced major force reductions in Europe and other overseas locations that will occur by 2015. Further reductions are, therefore, not being considered as a viable alternative for the realignment of Army forces as it would preclude the ability of U.S. forces to meet critical overseas mission requirements.

3.4 Screening and Evaluation Criteria Used to Identify a Range of Potential Installation Stationing Locations

The Army used elements of the need for action defined in Chapter 1, in conjunction with other external limiting factors, to narrow the field of installations to those capable of supporting the Proposed Action.

3.4.1 Alternative 1 Screening Criteria

All installations of every size were initially considered. Installation locations carried forward for analysis in this PEA for Alternative 1 are installations that have the potential to lose more than 1,000 Soldiers and Army civilians as part of force reductions from FY 2013 to FY 2020. These installations also must be ones with units in the operational Army that could produce the reductions that are needed to meet the end strength requirements. Installations with fewer operational Army forces do not have the potential for large reductions and were excluded from the analysis. For example, Fort Sam Houston, Texas, (part of Joint Base San Antonio) has 5,904 active Army Soldiers but was not included because this installation is part of a major Army medical center whose mission will be expected to continue. The installation also has a major medical training mission that supports the Army's generating force for the U.S. Army Medical

Command that is not expected to be reduced. It also does not have the operational Army units with large numbers that would meet the threshold for inclusion in this programmatic analysis. Fort Meade, Maryland, has 4,401 Active Duty Soldiers; however, the mission at Fort Meade is the "Center of Excellence in Information, Intelligence, and Cyber". It is also the home of the Defense Adjudication Activities, the Defense Information Systems Agency, and the Defense Media Activity. It does not include major operational Army units and, therefore, does not meet the threshold for inclusion in this document. As a final example, Fort Huachuca, Arizona, has 3,004 Active Duty Soldiers; it is the home of the Army's Intelligence Center and School, and, therefore, has many Soldiers in the generating force. It also does not have the operational Army units and the potential for a reduction of 1,000 military personnel that would meet the threshold for inclusion in this analysis.

All installations where a BCT is currently stationed were carried forward for consideration under Alternative 1. These are:

- Fort Benning, Georgia
- Fort Knox, Kentucky
- Fort Polk, Louisiana
- Fort Wainwright, Alaska
- Joint Base Elmendorf-Richardson, Alaska
- Joint Base Lewis-McChord, Washington
- Fort Bliss, Texas
- Fort Bragg, North Carolina
- Fort Campbell, Kentucky
- Fort Carson, Colorado
- Fort Drum, New York
- Fort Hood, Texas
- Fort Riley, Kansas
- Fort Stewart, Georgia
- Schofield Barracks, Hawai'i

Additionally, installations that support major training schools or Combat Training Centers and have the potential to lose 1,000 or more military employees are carried forward for analysis and include:

- Fort Gordon, Georgia
- Fort Lee, Virginia
- Fort Leonard Wood, Missouri
- Fort Sill, Oklahoma
- Joint Base Langley-Eustis, Virginia
- Fort Irwin, California

It is important to note that nearly all installations will be affected by some force reduction, though not at the population size or unit type to warrant their consideration at the programmatic level.

3.4.2 Alternative 2 Screening Criteria

For Alternative 2, the screening and evaluation criteria are: being a current BCT stationing location; possessing the capability to provide the necessary training for new units and the ability

to provide garrison support infrastructure; and supporting Army cost reductions. These screening criteria were applied to the full range of reasonable potential stationing locations capable of supporting Army 2020.

3.4.2.1 Current BCT Stationing Locations

These installation locations are:

- Fort Benning, Georgia
- Fort Knox, Kentucky
- Fort Polk, Louisiana
- Fort Wainwright, Alaska
- Joint Base Elmendorf-Richardson, Alaska
- Joint Base Lewis McChord, Washington
- Fort Bliss, Texas
- Fort Bragg, North Carolina
- Fort Campbell, Kentucky
- Fort Carson, Colorado
- Fort Drum, New York
- Fort Hood, Texas
- Fort Riley, Kansas
- Fort Stewart, Georgia
- Schofield Barracks, Hawai'i

3.4.2.2 Training Capacity

The installation's current training facilities and maneuver acreage are considered as part of this screening criterion. This includes possessing sufficient land for training and maneuver areas for realigned units, and sufficient live-fire and qualification ranges to support unit live-fire training. None of the installations were eliminated as a result of this screening criteria and all of the installations listed in Section 3.4.2.1 could support training of additional units (i.e., Alternative 2).

3.4.2.3 Garrison Support Facilities Availability and Ability to Support Expenditure Reductions

The current capability of the installation to support Soldiers, Families, and civilians (e.g., Soldier and Family housing, offices, barracks, classrooms, medical clinics, child and youth development centers, and school systems) was considered. The presence of adequate available infrastructure to support Soldiers and their Families as part of Army BCT restructuring was considered, along with the ability of the installation to support expenditure reductions. Installations at which changes are considerably more expensive to implement would be eliminated from detailed evaluation. Installations considered for stationing realignments must have a majority of the existing facilities needed to support new units, or the buildable space for them. If installations do not have sufficient facilities or buildable space, they were not carried forward for analysis as part of Alternative 2.

Fort Bragg and JBLM do not have additional or excess garrison support facilities or buildable space to accommodate additional units, though their BCTs could restructure without experiencing net growth at the installation. This is because BCT gains would be offset by inactivation of other units. Because there would not be a situation where Fort Bragg or JBLM

would see a net increase in Soldiers overall, even with BCT restructuring, they were not carried forward for analysis as part of Alternative 2.

Fort Benning is also not being carried forward for analysis as part of Alternative 2. While restructuring of the Fort Benning BCT could occur, there would not be a situation where Fort Benning would see a net increase in Soldiers overall; therefore, Fort Benning is not being carried forward for analysis as part of Alternative 2. Fort Benning does not have sufficient unrestricted maneuver land to support the training needs of additional maneuver units.

The installations below were carried forward for consideration as part of Alternative 2:

- Fort Knox, Kentucky
- Fort Polk, Louisiana
- Fort Wainwright, Alaska
- Joint Base Elmendorf-Richardson, Alaska
- Fort Bliss, Texas
- Fort Campbell, Kentucky
- Fort Carson, Colorado
- Fort Drum, New York
- Fort Hood, Texas
- Fort Riley, Kansas
- Fort Stewart, Georgia
- Schofield Barracks, Hawai'i

3.5 Restructuring/Realignment Considerations

It is important to remember that under either action alternative, the overall end-strength of the Army will decline by the same amount. Increases at an installation under Alternative 2, in many cases, would likely be offset by losses identified in Alternative 1. It is also important to remember that the transformation would occur over a number of years and that it would be subject to change during that period because of external events.

Soldiers whose units would be inactivated under this process would not be immediately released from the Army. They would be re-assigned to other units or to schools. Eventually, they would leave the Army after their enlistments ended, upon retirement, or through other regularly-occurring events. In addition, the Army would control its size through reduced accessions and re-enlistments. For civilian reductions, the Army anticipates managing a majority of its workforce reduction through scheduled and incentivized retirements and cessation and reduced pace of new hiring actions, though some additional measures, such as Reductions in Force, may be needed to match budget authorizations with workforce size.

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4 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

4.0.1 Introduction

This section presents a consolidated discussion of the affected environment (baseline environmental conditions) at each installation, and the environmental and socioeconomic impacts anticipated as a result of the implementation of the alternatives. The baseline for the Proposed Action is considered the installation's current condition in 2012, to include the implementation of HQDA stationing decisions that have been made, but not yet implemented.

This PEA provides decision makers, regulatory agencies, and the public with information on the environmental and socioeconomic impacts that could result from the implementation of Army 2020 force structure realignments. This information will allow decision makers to review the environmental and socioeconomic impacts of the alternatives and select one. It will also enable the Army to make informed decisions in coming years as they reshape the structure of Army forces to meet future national security requirements. As they do so, they will determine whether future actions are sufficiently covered by this EA and whether supplementation is necessary.

4.0.2 Valued Environmental Component Impact Ratings

This PEA adopts an analytic methodology similar to that used in the Army's *Programmatic Environmental Impact Statement for Army Transformation* (March 2002) and the *Programmatic Environmental Impact Statement for Army Growth and Force Structure Realignment* (October, 2007). The Army utilized the process in the Army's *NEPA Analysis Guidance Manual* (2007) for evaluating impacts to each environmental media area or valued environmental component (VEC) for each of the 21 installations and their associated maneuver sites. A general description of these VECs is provided in Section 4.0.4 of this section. Through coordination with installation staff and subject matter experts at each location, VEC ratings were identified and verified, and are described in this section. VEC ratings are the basis for determining whether the impact is significant or not. VEC ratings range from beneficial to significant:

- ***Beneficial –*** A positive net impact.
- ***No Impact/Negligible – An*** environmental impact that could occur, but would be less than minor and might not be perceptible.
- ***Minor*** – While impacts would be perceptible, they would clearly not be significant.
- ***Less than Significant*** – An impact that is not significant, but is readily apparent. Additional care in following standard procedures, or applying precautionary measures to minimize adverse impacts, may be called for.
- ***Significant but Mitigable*** – A significant impact anticipated, but the Army can put management actions or other mitigation measures in place to reduce impacts to less than significant.
- ***Significant*** – An adverse environmental impact, which, given the context and intensity, violates or exceeds regulatory or policy standards or otherwise exceeds the identified threshold. The significant impact, however, cannot be mitigated with practical means to a level below significance.

A summary of environmental impacts is provided in Section 4.22 and presented in consolidated tables of anticipated impacts in Tables 4.22-1 (No Action Alternative), 4.22-2 (Alternative 1), and 4.22-3 (Alternative 2). Each installation sub-section also includes a table of anticipated impacts.

Additional installation site-specific analyses will be conducted, if required, to address actions necessary to implement Army 2020 force structure realignment decisions. This is appropriate given the extended duration and numerous decisions that this PEA is designed to support. Implementation of some of these decisions may require site-specific follow-on NEPA analysis to evaluate local siting considerations and other environmental issues.

4.0.3 Valued Environmental Components and Thresholds of Significance

The Army uses a standardized methodology to complete NEPA analysis that is outlined in the *Army's NEPA Guidance Manual* (2007). The discussion that follows provides an overview description of each VEC evaluated in this document and provides a discussion of thresholds of significance.

To maintain consistent evaluation of impacts in this PEA, thresholds of significance were established for each resource area. The Army developed these thresholds to take into account substantive environmental regulations and ensure an objective analysis of anticipated impacts. Although some thresholds have been so designated based on legal or regulatory limits or requirements, others reflect some discretionary judgment on the part of the Army. Quantitative and qualitative analyses have been used, if appropriate, in determining whether, and the extent to which, a threshold is exceeded.

It must be remembered, however, that significance is a matter of context and intensity. Loss of a small number of trees in an arid area with few trees could be significant while loss of the same number of trees in a forested area might not. Any variation in the significance criteria is set out in the discussion of impacts for specific locations.

An impact may trigger one of these thresholds, but mitigation could reduce the impact to less-than-significant. Also, note that regions of influence (ROI) may vary at installations because of specific circumstances. In addition, the context of the affected environment at a given installation may mean that a site-unique threshold is applicable.

4.0.4 Valued Environmental Component Descriptions

Air Quality

Air resources are affected by gases and particulates from stationary and mobile sources and are influenced by meteorological conditions such as prevailing wind, sunlight, and temperature inversions. The Clean Air Act (CAA), the primary federal statute regulating air emissions, applies fully to the Army and all its activities.

Depending on the installation's location and whether or not it is considered a "major source" of air pollutants, the CAA may require permitting before construction, demolition, or stationing commences. The specific requirements will depend on whether the installation is located in a "nonattainment" or "maintenance" area.[8] If the installation is located in an "attainment" or "unclassifiable" area, it may have to assess the project's contribution to the local air shed to ensure Prevention of Significant Deterioration (PSD). The PSD regulations provide special protection from air quality impacts for certain areas, primarily National Parks and Wilderness Areas that have been designated as "Class I" areas. These are areas where air quality (especially visibility and acid deposition) has been given special emphasis.

***Conformity*.** The CAA (Section 176(c)) prohibits federal activities from taking various actions in nonattainment or maintenance areas unless they first demonstrate conformance with the applicable State Implementation Plan (SIP). Regardless of compliance with other environmental regulations, failure to satisfy the requirements of the conformity rule can, by itself,

[8] This status is based on six criteria air pollutants for which there are National Ambient Air Quality Standards (NAAQS).

preclude an installation from moving forward with the project. A conformity review is a multi-step process used to determine and document whether a Proposed Action meets the conformity rule. The conformity review would require the installation to:

- Evaluate the nature of the Proposed Action and associated air pollutant emissions;
- Determine whether the action is exempted by the rule;
- Calculate air pollutant emissions and impacts associated with the Proposed Action;
- Mitigate emissions if regulatory thresholds are exceeded;
- Prepare formal documentation of the findings; and
- Publish findings to the public and regulatory community.

Some Army installations are located in non-attainment areas or maintenance areas. At these locations, air conformity reviews would be conducted, if deemed appropriate. This analysis cannot be done until the number of Soldiers and civilians, equipment, facilities requirements, and stationing dates are known. At many installations, formal conformity determinations will not be required because the action will be exempt or *de minimis*.

Prevention of Significant Deterioration. Installations that are classified as "major sources," and/or located in areas classified as "attainment" or "unclassifiable" must obtain approval to construct a new emissions source or to modify existing emissions sources if the modification project would result in a significant emission increase. It should be noted that "project" includes operational changes that affect emissions, not only equipment construction or modification. The purpose of the PSD program is to prevent areas that meet the CAA standards from becoming nonattainment areas. A PSD Permit must be obtained in order to:

- Construct a new major stationary source of criteria pollutants, or
- Modify an existing major stationary source such that emissions from the source would increase significantly. (The significance thresholds vary from 0.0004 to 100 tons per year (tpy) depending on the pollutant).

New Source Review. The Nonattainment New Source Review (NNSR) Permit Program (also known as Nonattainment Area New Source Review (NSR) or Major NSR) applies in nonattainment areas only. Its purpose is to ensure that emissions in these areas are not increased and preferably decreased as a result of new construction or modification projects. This program applies to operational changes as well as equipment changes. It is important to emphasize that NNSR only applies to the pollutants for which the area is in nonattainment.

A NNSR permit must be obtained in order to:

- Construct a new major stationary source of criteria pollutants, or
- Modify an existing major source such that emissions from the source would increase significantly.

Minor Source Pre-Construction Permitting. To be sure all emissions sources are reviewed with respect to CAA regulations and to prevent source owners from deliberately incrementing their emission increases to avoid PSD/NNSR, the U.S. Environmental Protection Agency (EPA) and the states developed Minor NSRs. This program has many different names - Notice of Construction, Approval to Operate, Permit to Operate, etc. Each regulatory agency develops regulations for a pre-construction permit program. Typically, the regulations will include a list of exempt sources such as temporary sources to be on-site less than 90 days (this often includes construction equipment), small boilers or furnaces (residential size), and ventilation systems. This list may have 100 exempt source types. Most regulators also exempt sources that have a potential to emit below a specific threshold. These thresholds should not be confused with any

of the other thresholds previously discussed. For example, some states exempt emissions of any pollutant less than 1 tpy from a single emission source from Minor NSR permitting, if no other regulations apply.

Generally, an impact would be considered significant if it led to a violation of a Title V operating permit or synthetic minor permit.

Airspace

The Federal Aviation Administration (FAA) manages all airspace within the U.S. and its territories. The FAA recognizes the military's need to conduct certain flight operations and training within airspace that is separated from that used by commercial and general aviation.

Airspace is defined in vertical and horizontal dimensions and by time. Airspace is a finite resource that must be managed to achieve equitable allocation among commercial, general aviation, and military needs. The FAA has established various airspace designations to protect aircraft while operating near and between airports and while operating in airspace identified for defense-related purposes. Flight rules and air traffic control procedures govern safe operations in each type of designated airspace. Most military operations are conducted within designated airspace and follow specific procedures to maximize flight safety for both military and civil aircraft.

Controlled airspace is a generic term for the different types of airspace and defined dimensions within which air traffic control service is provided to instrument-flight-rules flights and visual-flight-rules flights in accordance with the airspace classification. The classifications of airspace are as follows:

- ***Class A Airspace*.** This airspace occurs from 18,000 feet above mean sea level (MSL) to 60,000 feet above MSL. All operations within this airspace are in accordance with regulations pertaining to instrument-flight-rules flights. This airspace is dominated by commercial aircraft using jet routes between 18,000 and 45,000 feet above MSL.
- ***Class B Airspace*.** This airspace occurs from the surface to 14,500 feet above MSL around the Nation's busiest airports. Before operating in Class B airspace, pilots must contact controlling authorities and receive clearance to enter the airspace. Aircraft operating within Class B airspace must be equipped with specialized electronics that allow air traffic controllers to accurately track aircraft speed, altitude, and position.
- ***Class C Airspace*.** This airspace occurs from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by a radar approach control, and meet specified levels of instrument-flight-rules operations or passenger enplanements. Aircraft operating within Class C airspace must be equipped with a two-way radio and an operable radar beacon transponder with automatic altitude reporting equipment. Aircraft may not operate below 2,500 feet above the surface within 4 nautical miles of the primary airport of a Class C airspace area at an indicated airspeed of more than 200 knots (230 miles per hour).
- ***Class D Airspace.*** This airspace occurs from the surface to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports that have a control tower. Class D airspace encompasses a 5 statute mile radius from the airport. Unless authorized otherwise by air traffic control, aircraft must be equipped with a two-way radio. Aircraft may not operate below 2,500 feet above the surface within 4 nautical miles of the primary airport of a Class D airspace area at an indicated airspeed of more than 200 knots (230 miles per hour).
- ***Class E Airspace*.** This airspace is any controlled airspace not designated as Class A, B, C, or D airspace. It includes designated federal airways, portions of the jet route

system, and area low routes. Federal airways have a width of 4 statute miles on either side of the airway centerline and occur between the altitudes of 700 feet above ground level (AGL) and 18,000 feet above MSL, but they may have a floor located at ground level at nontowered airfields. No specific equipment is required to operate within Class E airspace.

- ***Class G Airspace.*** Class G airspace (uncontrolled) is that portion of the airspace that has not been designated as Class A, B, C, D, or E airspace. Air traffic control does not have authority over operations within uncontrolled airspace. Primary users of Class G airspace are visual-flight-rules general aviation aircraft.
- ***Special Use Airspace.*** This airspace permits activities that either must be confined because of their nature or require limitations on aircraft that are not a part of those activities. Prohibited Areas and Restricted Areas are regulatory special use airspace (SUA). They are established in Federal Aviation Regulation Part 73 through the rule-making process of the Administrative Procedures Act (5 United States Code (USC) 551-702). Warning Areas, Military Operations Areas (MOAs), Alert Areas, and Controlled Firing Areas (CFAs) are non-regulatory SUA. The FAA may designate these types of SUA without resort to the procedures demanded of the Administrative Procedures Act.

Generally, a significant impact would be one that led to a violation of FAA administration regulations that undermines aviation safety or results in substantial infringement of private or commercial flight activity.

Cultural Resources

Cultural Resources include both historic properties and historic resources. The regulations guiding the management of cultural resources are set forth in Army Regulation (AR) 200-1. Cultural resources include historic properties as defined by the National Historic Preservation Act (NHPA), cultural items as defined by Native American Graves Protection and Reparation Act (NAGPRA), archeological resources as defined by Archaeological Resources Protection Act (ARPA), sacred sites as defined in Executive Order (E.O.) 13007 to which access is afforded under American Indian Religious Freedom Act (AIRFA), and collections as defined in 36 CFR 79. The NHPA of 1966, as amended, states that historic resources are "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register of Historic Places (NRHP), including artifacts, records and material remains related to such property or resource." Cultural resources on Army installations generally refer to buildings, structures, and archaeological sites.

Significant impacts would occur if there were substantial concerns raised by Indian Tribes or Native Hawaiian Organizations regarding potential impacts to properties of religious and cultural significance to those tribes or organizations; or direct or indirect alteration of the characteristics that qualify a property for inclusion in the NRHP (may include physical destruction, damage, alteration, removal, change in use or character within setting, neglect causing deterioration, transfer, lease, sale) without appropriate mitigation.

Noise

Noise can be defined as unwanted sound that interferes with normal human activities and may disturb wildlife populations or disrupt breeding cycles. Impulse noise levels from high-intensity military activities may cause buildings and objects nearby the source to vibrate, resulting in potential structural damage.

The Noise Management Program is implemented Army-wide to protect the installation mission and to protect the health and welfare of military personnel, their Families, and civilian employees on the installation while also providing noise abatement and mitigation measures

that protects the public by reducing environmental noise from training where feasible. Army installations develop noise management plans to identify recommended land uses based on noise exposure, and to provide a noise management strategy that supports the installation's mission.

The Installation Operational Noise Management Plan (IONMP) includes education, complaint management, noise and vibration mitigation, noise abatement procedures, and the Installation Compatible Use Zone (ICUZ) Program. The ICUZ Program provides a methodology for analyzing exposure to noise and safety hazards associated with military operations and provide land use guidelines for achieving compatibility between the Army and the surrounding communities.

At this level of analysis, the Army will consider if there are actions that would expand these zones. Such expansion might be indicated, for instance, by a requirement that new ranges be established to support increased numbers of Soldiers.

Noise Impacts to the Community. The U.S. Army Public Health Command has defined three noise zones (NZs) to be considered in land use planning (see Table 4.0.4-1) and the noise impact on the community is translated into NZs. In general, within NZ I, where very few people will be bothered by the noise level, land use is unrestricted and thus deemed compatible with most noise-sensitive land uses. In NZ II, as outdoor noise levels increase and more people become annoyed by the noise, restrictions or qualifications are placed on certain land uses, specifically, residential development. NZ II is normally incompatible with noise-sensitive land uses. In NZ III, as noise levels escalate, fewer and fewer compatible land uses are indicated. NZ III is incompatible with noise-sensitive land uses.

Installations use the Land Use Planning Zone (LUPZ) to provide the means to predict possible complaints, and meet the public demand for a better description of what will exist during a period of increased operations. The associated noise levels for each zone are shown in the Table 4.0.4-1.

Table 4.0.4-1. Noise Levels

Noise Zone	Population Highly Annoyed (Percent)	Transportation (A-weighted[1] Day-Night Average Sound Level)	Impulsive - Large Caliber (C-weighted[2] Day-Night Average Sound Level)	Small Arms (Decibels A-weighted)
I	<15	<65 dBA	<65 dBA	<62 dBA
II	15 – 39	65 – 75 dBA	65 – 75 dBA	62 – 70 dBA
III	>39	>75 dBA	>75 dBA	>70 dBA

[1]A weighting filters out the low frequencies and slightly emphasizes the upper middle frequencies around 2-3 kilohertz.
[2]By comparison, C weighting is almost unweighted, or no filtering at all.
dBA=A-weighted decibel

Noise Impacts to Wildlife. At ranges where training occurs, noise is generated from fixed-wing and rotary-winged aircraft overflights, large and small caliber weapon fire, and vehicle maneuver throughout the range. Several reference materials exist that summarize the impact of military training on wildlife. Two examples are the *Environmental Assessment for the Aerial Gunnery Range at Yakima Training Center, WA*; and, *"Effects of Military Noise on Wildlife*" (Bowles, 1990). The following responses are common in wildlife exposed to training noise.

- Quality of habitat selection tends to outweigh disturbance impacts of training noise. Animals utilize Army installations as habitat because they contain large tracts of

relatively undeveloped land. Due to regulatory policies and conservation practices, the land and wildlife are often managed to preserve species diversity and habitats where these activities do not conflict with the military mission. Generally speaking, most species of animals will choose higher quality habitats on military installations over lower quality more fragmented habitats despite the noise from military activities (Bowles, 1990).

- Habitat supplies food, shelter from the elements in some cases, and vegetative cover. Food supply is a limiting factor for survival. If the food supply is sufficient the habitat will remain preferable to the animal species regardless of the magnitude of noise disturbance, especially if the noise occurs in predictable patterns. Since Soldiers train according to a prescribed schedule, the noise generated by training reduces the occurrence of responses to unexpected training activities.
- Studies conducted on military noise impacts to wildlife have determined that mammals will move away from loud noises, but with few exceptions, will return to their home range.

Significant impacts generally include noise impacts causing reclassification of NZs to NZ II or III around sensitive receptors (e.g., residences, school, hospital, churches or daycare).

Soil Erosion

Erosion is the gradual wearing away of land by water, wind, and other general weather conditions, and can be influenced by many military and human activities within a given landscape. Erosion impacts can be influenced by the types of soils, vegetative cover, topography, weather, and climate, and may be amplified by the frequency and types of training. Soil erosion can be an important concern on military lands where maneuver training involving large vehicles (tracked and wheeled), and large and small arms fire occur. It can undermine the ability of the natural environment to support the Army mission, and once the erosion process has started, the direct effects can usually not be reversed.

The Army has numerous programs and management initiatives to reduce environmental damage to training lands. The principal mechanism for this management is the Integrated Training Area Management (ITAM) Program. The ITAM Program provides a comprehensive means to address the cumulative effects of soil erosion on Army training lands (Canton, et. al., 2006).

Significant impacts generally include soil loss or compaction from Army training to the extent that natural reestablishment of native vegetation within two growing seasons is precluded on a land area greater than a total of 1,000 acres; or loss of soil productivity due to construction activities, which convert the soil to improved infrastructure on more than 5 percent of land under administrative control of the installation.

Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species)

The Endangered Species Act (ESA) was passed in 1973 to address concerns about the decline in populations of many unique wildlife species. The purpose of the ESA is to rebuild populations of protected species and conserve “the ecosystems upon which endangered and threatened species depend” (USFWS, 2001). ESA offers two classes of protection for rare species in decline: endangered or threatened. Endangered means a species is in danger of extinction throughout all or a significant portion of its range. Threatened status indicates a species is likely to become endangered within the foreseeable future. All species of plants and animals, except pest insects, are eligible for listing as endangered or threatened (USFWS, 2001).

The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) are jointly responsible for administering the ESA. As of June 6, 2012, 1,393 federally-listed species (794 plants, 599 animals) were listed under the ESA. The Army has identified 188 threatened and endangered species on 99 installations for FY 2007. By far, the most common category is plants, which account for 62 percent of the threatened and endangered species, followed by birds (14 percent). The other categories of threatened and endangered species are amphibians, crustaceans, fish, insects, mammals, other invertebrates, reptiles, and snails (USAEC, 2009). Out of these species, 112 occur on locations evaluated in this PEA. All federal agencies are required to protect threatened and endangered species while carrying out projects and to preserve threatened and endangered species habitats on federal land. The USFWS and NMFS also coordinate threatened and endangered species conservation efforts with state agencies and private landowners. Ideally, with sufficient protection under the ESA, the threatened and endangered species populations will recover to the point that they no longer need protection under the ESA. To facilitate this process, a team of experts develops a recovery plan that describes the steps needed to restore the species to health.

Under the ESA, it is illegal to "take" threatened and endangered species. As defined in the ESA, "the term take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." The Secretary of the Interior has defined the term "harm" as "an act which actually kills or injures wildlife." Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife, or by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (USFWS, 2001). Because most threatened and endangered species are not often hunted or collected, habitat degradation is the primary reason for population declines of listed species.

The ESA contains provisions for designation of "critical habitat" for listed species when deemed essential for the conservation and recovery of a species. Critical habitat includes geographic areas "on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protection" (USFWS, 2001). Areas not occupied by the species at the time of listing but are considered essential to the conservation of the species can be designated as critical habitat. Critical habitat designations are limited to federal agency actions or federally-funded or permitted activities.

Under Section 7 of the ESA, federal agencies (including the Army) must carry out programs for the conservation of threatened and endangered species. Installations must also adopt integrated natural resources management plans, which include provisions for the conservation of these species and their habitats.

Significant impacts would include:

- Substantial permanent conversion or net loss of habitat at landscape scale;
- Long-term loss or impairment of a substantial portion of local habitat (species-dependent); and
- Unpermitted "take" of threatened and endangered species.

Wetlands

For regulatory purposes under the Clean Water Act (CWA), the term wetlands means "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions [40 CFR 232.2(r)]. There are many different kinds of wetlands to include swamps, marshes, bogs, and similar areas. Wetland definitions can vary by agency, regulations, and policy. Wetland functions are of value to the sustainable management of military lands because of the ecological functions wetlands

they provide in addition to training realism. Three wetland functions applicable to sustainable management are flood attenuation, groundwater recharge, and improvement of water quality by filtering sediment, nutrients, and toxics.

The National Wetlands Inventory (NWI) of the USFWS has identified and mapped most of the known wetlands in the conterminous U.S., including those on military installations. DoD Instruction 4715.3 states that installations will manage for "no net loss" of wetlands. In order to manage wetlands properly, installations have used the NWI and have conducted planning level surveys to determine the extent and location of wetlands across their installation. By identifying wetlands early in the NEPA process, and utilizing a "Go/No-Go" approach where avoidance is preferred to direct or indirect impacts, installations have the ability to avoid costly mitigation and potential delays in implementation of the Proposed Action.

Significant impacts would include unpermitted loss or destruction of more than one acre of jurisdictional wetlands.

Water Resources

Water resources include surface water, groundwater, and floodplains, as well as other conservable resources such as estuaries and watersheds. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale. Stormwater flows, which may be exacerbated by high proportions of impervious surfaces (e.g., buildings, roads, and parking lots), are important to the management of surface water. Stormwater is also important to surface water quality because of its potential to introduce sediments and other contaminants into lakes, rivers, and streams. Groundwater consists of the subsurface hydrologic resources. It is an essential resource often used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater typically may be described in terms of its depth from the surface, aquifer or well capacity, water quality, surrounding geologic composition, and recharge rate. Floodplains are areas of low-level ground present along a river or stream channel. Such lands may be subject to periodic or infrequent inundation due to rain or melting snow. Risk of flooding depends on topography, the frequency of precipitation events, and the size (areal extent) of the watershed above the floodplain. Federal, state, and local regulations generally limit development in floodplains to passive uses, such as recreational and preservation activities, in order to reduce the risks to human health and safety.

The CWA gives the EPA authority to regulate the discharge of pollutants into the waters of the U.S. It set the ground rules for implementing pollution control programs as well as continuing the requirement to set water quality standards for all surface water contaminants. The EPA establishes thresholds for pollution and contaminants to water bodies that are referred to as Total Maximum Daily Load (TMDL). A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still safely meet water quality standards. If these thresholds are exceeded, the water body is classified as impaired.

Army activities subject to CWA regulation include activities involving the collection and discharge of effluents (e.g., discharging pollutants from a point source into waters of the U.S.) or construction activities near waterways or wetlands. Several compliance responsibilities under the CWA result from the types of facilities used by the Army and the range of activities at Army installations.

Significant impacts would include the exceedance of TMDLs for sediments that causes a change in surface water impairment status, or an unpermitted direct impact to a water of the U.S.

Facilities

Army real property includes lands, facilities, and infrastructure. Facilities are the buildings, structures, and other improvements that support the Army's mission. Infrastructure is the combination of supporting systems that enable the use of land and resident facilities.

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly synthetic, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as "urban", or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to economic growth of an area. Although there is no national consensus as to what constitutes infrastructure, the following reflect the principal elements most often associated with the term: water systems, wastewater systems, stormwater systems, solid waste management, energy, traffic and circulation, transportation systems, and communication systems.

Adding Soldiers to an installation could create a need for new facilities, requiring construction and the impacts that would accompany it, and possibly renovation of historic buildings. Reducing strength could mean that excess facilities would be demolished or receive less maintenance. It could also mean that infrastructure use would decrease and this could cause problems for certain systems. For instance, water pipe systems often require a certain flow for optimum operation.

Significant impacts would occur if the capacity of current infrastructure or available space could not support the Proposed Action or if violation of regulatory limits occurs.

Socioeconomics

Socioeconomics are defined as the basic attributes and resources associated with the human environment, particularly population and economic activity. Population levels are affected by regional birth and death rates, as well as immigration and emigration, which are often related to regional employment availability. Economic activity typically encompasses employment, personal income, and industrial or commercial growth. Changes in these two fundamental socioeconomic indicators may be accompanied by changes in other components, such as housing availability and the provision of public services. Socioeconomic data at county, state, and national levels permit characterization of baseline conditions in the context of regional, state, and national trends.

The principal factors affecting socioeconomics at Army installations are construction project expenditures; salaries (Soldier, civilian, and contractor); procurement of goods and services locally and regionally by Soldiers, civilians, and their Family members; and employment changes. As the Army increases or decreases either expenditures or employment (Soldier or civilian) at an Army installation, these impacts are felt within the economic ROI; by businesses, local governments, and individuals. Impacts from military stationing actions can manifest themselves as a loss or gain in jobs; change in real estate values; change in educational, social, and medical services; or change in state or local tax revenue. Installation changes in Soldier or civilian employee populations could result in varying degrees of economic impact depending on the economic diversity and size of the regional economy. The ROI consists of the installation and the counties where the people who work on the installation live, or where they or the installation itself obtain goods and services.

Socioeconomic impacts are linked through cause-and-effect relationships. With the Proposed Action, there would be direct impacts from proposed military employee (Soldier and civilian employee) changes. Impacts to jobs, income, business volume, and personal spending in the ROI would all be anticipated. These changes in Soldier and government civilian employee

population would also be associated with some change in the need for contract support and lead to indirect impacts through a reduction in the overall demand for goods and business services within the region. Economic modeling and forecasting provide an estimate of the potential intensity of socioeconomic impacts. Modeling provides a method of qualifying and quantifying certain potential monetary and employment impacts of the Proposed Action.

In order to model the socioeconomic impacts of the alternatives evaluated in this PEA, the Army primarily utilized the Economic Impact Forecast System (EIFS), to determine and quantify the magnitude of economic impact. EIFS was developed in support of BRA stationing actions, and has been the Army's primary modeling tool for economic impacts since the late 1990s.

EIFS is a computer-based economic tool that calculates an estimate of the direct and indirect effects resulting from a given action. Changes in installation employment and spending represent the direct effects of the action. On the basis of the input data and calculated multipliers, the model estimates ROI changes in sales volume, income, employment, and population, accounting for the direct and indirect effects of the action. The model projects an estimated total change in population, employment, income, and sales volume for the defined ROI as a whole. In coordination with the staff of potentially affected installations, the USACE conducted economic modeling of impacts using the EIFS model to determine the intensity of economic impacts for each installation's ROI. EIFS projections of changes in total employment, income, and sales are all presented in each installation analysis section.

The databases in EIFS are national in scope and cover the approximately 3,700 counties, parishes, and independent cities that are recognized as reporting units by federal agencies. EIFS allows the user to define an economic ROI by identifying the counties, parishes, or cities to be analyzed. Once the ROI is defined, the system aggregates the data, calculates multipliers and other variables used in the various models in EIFS, and prompts the user for forecast input data. For purposes of the EIFS analysis, a change is considered significant if it falls outside the historical range of ROI economic variation. To determine the historical range of economic variation, the EIFS model calculates a rational threshold value (RTV) profile for the ROI. This analytical process uses historical data for the ROI and calculates fluctuations in sales volume, income, employment, and population patterns. The positive and negative historical extremes for the ROI become the thresholds of significance (i.e., the RTVs) for economic change. If the estimated effect of an action falls above the positive RTV or below the negative RTV, the effect is considered to be significant (see EIFS and RECON explanatory example, below).

For the purposes of this socioeconomic impacts analysis, the Army recognizes that the EIFS modeling tool has some potential for inaccuracy in its definition of RTVs. For example, the EIFS model utilizes data for regional economic variability that ranges from the years 1969 through 2000. Unfortunately, given the timeframe for these Army-wide decisions, it was not possible to update the EIFS model to reflect the latest economic data in the model. Determinations of "significant" economic impacts and EIFS RTV values are, therefore, based on the economic fluctuation that occurred between 1969 and 2000, and do not account for some of the more extensive fluctuations that have occurred in the past decade. To some extent, exclusion of the fluctuations of 2008 and the recent recession from the RTV calculations leads to a more precise determination of significance. Inclusion of the 2008 data would raise the threshold for significance and mask impacts that would otherwise be identified as significant. Use of the older data from economically more stable years could only result in more, rather than fewer, impacts being identified as significant, and, therefore, represents a more conservative assumption for purposes of this analysis. The Army has used current census and economic data to update EIFS and all other economic measurements.

To validate the results of EIFS, the Army also used the Regional Economic System (RECONS) model as a predictor of potential economic impacts. The RECONS model is a regional economic impact tool, which forecasts changes to the regional economy's sales, jobs, and income. RECONS provides a snap-shot in time of the anticipated socioeconomic impacts to the region. Unlike EIFS, the RECONS model was not specifically developed as a tool to model economic impacts of Army stationing activities. It was primarily developed to estimate the impact of cancellation or implementation of USACE civil works projects in a given region. For the purposes of this PEA analysis, however, data inputs similar to those in EIFS were utilized to generate a comparable projection of economic impacts, so that predictive data from the two models could be utilized to assess and compare impacts. Data inputs and discussion of how modeling data were utilized is presented in the Socioeconomics Analysis Methodology section below. Unlike EIFS, the RECONS model does not generate a significance threshold.

Socioeconomics Analysis Methodology. All installation stationing scenarios were uniformly evaluated using a consistent methodology to ensure comparable impacts are presented between the two models utilized. The full-time military employee population was obtained from the Army Stationing and Installation Plan (ASIP) (February, 2012). The baseline population numbers used for the evaluation of impacts includes permanent party Soldiers and full-time Army civilian employees. To update the EIFS model with the latest population 2010 census data, the data from each of the counties within the installation ROI were collected. Military personnel residing on-post were not captured in the 2010 census data for counties on which the installation is located, as installations are federal property, so the affected installations provided numbers of Soldiers and Family members living on post. The updated population of military and their dependents residing on the installation was then added to the ROI population. Estimates of non-farm employment within ROIs were obtained from the U.S. Census Bureau quickfacts website (http://quickfacts.census.gov). These estimates provided employment numbers for each county through 2009, and were used to estimate total non-farm employment within the ROI. These were the most recent data available at the time the analysis was prepared that could be used to generate employment estimates for the specific installation ROIs. While this data does not capture the full impact of the economic downturn that began in late 2008, it does capture a portion of the impacts to ROI employment.

For all installations, an estimate of the total number of dependents was generated using the latest data from the Defense Manpower Data Center (DMDC). For example, in 2011, 55.8 percent of full-time Army Soldiers were married. All Soldiers had, on average, 0.96 children ages 0-18 (DMDC, 2012). These percentages of 55.8 percent married and 0.96 children per Soldier were used in estimating the total population of dependents within the ROI. To calculate the number of dependents associated with an installation in the ROI population, the Army multiplied the number of full-time Army Soldiers and civil service employees by 55.8 percent to determine the projected number of spouses. The Army took the same full-time population of military employees and multiplied this number by 0.96 to calculate the number of dependent children associated with the installation population. These two numbers were then added together to obtain the total estimate of dependents likely to be associated with the installation's population in the ROI. Student trainees that are not on permanent change of station (PCS) status were not included in the estimate of dependents, as students and trainees are not usually accompanied by Family members.

Using this methodology to calculate dependent percentages may result in slightly higher estimates of the potentially affected dependent population than might otherwise be predicted; however, the Army chose to be conservative in its methodology so as not to underestimate impacts. There are three reasons the estimates of ROI dependent population are likely high. First, not all dependent spouses and children accompany their military sponsor to an

installation. The Army does have a small percentage of "geographic bachelors/ bachelorettes" who do not bring their Families to the installation when assigned there. Second, some Soldiers with dependent children are no longer married and do not have custody of those children within the ROI. Third, for all military employees, the estimate uses Soldier rates for marriage and child dependents, which are slightly higher than the comparable ratios for civilians.[9] The proposed alternatives include a mix of Soldiers and civil servants. In estimating the total potentially affected population, the higher Soldier percentages were utilized to estimate the total military and DoD civilian impacts, because a majority of those impacted by the alternatives would be Soldiers and not civilians.

To assess the ROI's loss or gain in population, the estimated change in dependents was added to the total number of proposed installation military employees lost or gained. To calculate the change in population, this total projected change in military employees and dependent population was divided by the total population estimate within the ROI (see EIFS and RECONS explanatory example below).

RECONS data is also presented in each installation socioeconomic consequences discussion and its projections are compared to those of EIFS. The RECONS model presents an estimate of total sales volume impacts, income, and employment impacts. The RECONS model projections do not include a projection of the direct income and jobs impacts of stationing realignments being proposed under each alternative. For example, if an installation alternative included the loss of 1,000 military employees, the direct loss of income (1,000 x average salary) and those jobs must be added back into the total RECONS model output to obtain the total impact, as the RECONS model only provides data outputs to quantify the projected indirect and secondary economic impacts to the surrounding community, but not the direct economic impacts of the employment change itself. To make RECONS estimates consistent with EIFS outputs, the calculation of direct economic impacts from the Army's Proposed Action were added to the model's estimates. To calculate RECONS income impacts, for example, the total direct impacts of the proposed alternatives (military employees x income), characterized as the "direct impact" in EIFS, was added back into the RECONS model by adding this direct impact number to regional data outputs in RECONS. These direct impacts numbers for income were added to business support services and secondary effects numbers to generate an approximation of total impact to income in the ROI. Adding business support services and secondary effects estimates from RECONS will present a figure analogous to "indirect" economic impact for EIFS. When these figures are added to include the direct impacts of a proposed stationing action, a total income figure is generated by RECONS that will present a comparable estimate to the EIFS model. At a multi-BCT installation, a total military population loss of 8,000 Soldiers and civil servants could potentially occur. The average salary estimate of these personnel ($41,830)[10] is multiplied by the number of personnel directly impacted (8,000), and this must be added back into the RECONS impact projections of direct regional business reductions, or projected reductions in contractor support, and indirect loss of jobs in the ROI that are not connected to the military but result simply from a reduced regional demand in goods and services. When this is done, an estimate of both income loss or gain is obtained. Each section then compares this data to EIFS projections for the ROI.

[9] The overall average marriage rate for the civilian population in the U.S. in 2012 was 49 percent, and the average number of dependents is 0.91 per adult (U.S. Census, 2012).

[10]The average salary for a Soldier in an IBCT is $41, 830. This figure was used for the average salary of all Soldiers who could potentially be eliminated at installations. Because the Army does not know which units would be involved, it is impossible to determine the precise salaries that would be at stake; $41,830, the yearly salary of a mid-career non-commissioned officer, was selected. The IBCT serves as a good representative example. The analysis also uses $41,830 as the average salary for civilian employees. This amount is the approximate salary for employees in the GS 5-9 range. Again, the Army does not know which civilian employees would be involved in reductions, but $41,830 is valid as an average salary for civilians involved in potential reductions.

In order to provide the most updated analysis for two of the most important socioeconomic impact indicators, the Army updated employment and income values using the most recent data (i.e., 2009 Census quickfacts data).

Income forecast values were updated by multiplying per capita money income for each county by overall county population, to determine the overall income for the ROI. The total change in income as determined by the EIFS and RECONS models (see 'Total' under 'Income' in Tables 4.0-3 and 4.0-4) was then divided by the new income total to determine the new percentages of increase/decrease in income in the ROI (see 'Percent' under 'Income' in Tables 4.0.4-3 and 4.0.4-4).

Similarly, employment forecast values were updated by combining private non-farm employment figures for each county with on-post military employment totals to determine the total private non-farm employment for the ROI. The total change in employment as determined by the EIFS and RECONS models (see 'Total' under 'Employment' in Tables 4..4-3 and 4.0.4-4) was then divided by the new employment total to determine the new percentages of increase/decrease in employment in the ROI (see 'Percent' under 'Employment' in Tables 4.0.4-3 and 4.0.4-4).

The installation impact discussions also present a calculation of predicted change to state tax revenue. This figure is generated by taking the total sales volume reduction and multiplying it by the state tax rate. At some installations, two states may be impacted. In these situations, the distribution of impacts are discussed, though precise estimates of the apportionment of how state tax revenue would be lost or gained was not an output of the models.

Economic Impact Forecast System and Regional Economic System Explanatory Example. Tables 4.0.4-2 through 4.0.4-4 are examples of the EIFS and RECONS tables provided for each installation.[11] As discussed above, significant impacts would occur if a forecast value falls outside of the economic growth or contraction significance values as shown in 4.0.4-2. For example, the sales volume, income, and employment forecast values are within the forecast ranges in Table 4.0.4-2; while the population change is outside the range (-2.44, where the range is 3.21 to -1.57). Population change is a significant socioeconomic impact because it falls outside of this range. Details on the calculations of sales volume, income, employment, and population are discussed above under Socioeconomics Analysis Methodology.

Table 4.0.4-2. Example Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence **Economic Impact Significance Thresholds**	**Sales Volume (Percent)**	**Income (Percent)**	**Employment (Percent)**	**Population (Percent)**
Economic Growth Significance Value	7.56	8.06	3.74	3.21
Economic Contraction Significance Value	- 8.16	- 7.74	- 4.23	- 1.57
Forecast Value	- 2.16	- 1.93	- 3.66	- 2.44

[11] Tables are taken from Section 4.5 (Fort Carson) and are the actual tables of predicted economic impacts associated with the implementation of Alternative 1 at Fort Carson.

Table 4.0.4-3. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- $554,736,100	- $417,692,300	- 8,844 (Direct) - 2,017 (Indirect) - 10,861 (Total)	- 20,144
Percent	- 2.16 (Annual Sales)	- 1.93	- 3.66	- 2.44

Table 4.0.4-4. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- $365,808,847 (Local) - $647,147,505 (State)	- $406,640,553	- 9,037 (Direct) -1,152 (Indirect) -10,189 (Total)
Percent	- 1.42 (Total Regional)	- 1.88	- 3.4

The basis of the EIFS analytical capabilities is the calculation of multipliers that are used to estimate the impacts resulting from military-related changes in local expenditures or employment. In calculating the multipliers, EIFS uses an economic modeling approach, which relies on the ratio of total economic activity to basic economic activity. Basic, in this context, is defined as the production or employment engaged to supply goods and services outside the ROI or by federal activities (such as military installations and their employees). According to economic base theory, the ratio of total income to basic income is measurable (as the multiplier) and sufficiently stable so that future changes in economic activity can be forecast. This technique is especially appropriate for estimating aggregate impacts and makes the economic base model ideal for the NEPA process.

Depending on the size and diversity of the economy within the ROI, a different set of multipliers may be used to predict the economic impacts. In Table 4.0.4-3, EIFS predicts that for the regional economy, the loss of 8,000 jobs as part of the implementation of Alternative 1 would lead to the collateral loss of an additional 2,861 jobs (a multiplier of -.36). Total sales volume would be generated by multiplying total income in Table 4.0.4-3 by an EIFS multiplier of 1.32 to get total estimated impacts to sales volume. In RECONS, the income figure is multiplied by two separate multipliers, one for the region, and one for the state. The multipliers will vary depending on the regional setting and if the installation ROI is predominately rural, semi-rural, or urban. In the example in Table 4.0.4-4, income at the regional level is multiplied by approximately .89 to obtain regional impacts to sales and a multiplier of 1.59 to obtain impacts at the larger state level. EIFS does not distinguish between the two geographic scales and its multiplier of 1.32 falls between the two RECONS estimates. The percentage of sales is the amount of change calculated based on annual sales for the ROI. For example, in Table 4.0.4-3 the loss in sales predicted by EIFS is - $554,736,100. This represents a change of -2.16 percent of annual sales in the ROI, which has a total estimated sales volume of approximately $25.68 billion For the RECONS prediction of -1.42 percent change predicted in Table 4.0.4-4, the total change in sales volume (locally) is divided by total sales within the ROI, as well. So, for example, RECONS predicts a change in sales volume of $365,808,847, which equates to an estimated change in sales of -1.42 percent within the ROI when divided by the total ROI sales volume of approximately $25.68 billion. The income percentage is based on the loss or gain in income over the total of non-farm income for the ROI. Total employment within the ROI was added using estimates of 2009 employment from the U.S. Census Bureau for each county or

parish within the ROI.[12] The estimates of ROI employment were then multiplied by the median income and added to the total income of those living on post to determine the total income within the ROI. Individuals living on post were not included in U.S. Census Bureau employment or income figures; and, their estimated income was also added to the total income of the ROI. The percentage of change was then calculated by dividing the predicted change in income by total ROI income. The percentage of population change is based on the predicted change over the ROI population. For each socioeconomic analysis, 2010 census data was used to calculate the populations of the ROI off post, and populations residing on post were then added to the totals. For example, EIFS predicts a change in population of –20,144 total individuals associated with a reduction of 8,000 military employees in Table 4.0.4-3. This includes Soldiers, Army government civilians, and their dependents. To obtain the estimated percentage loss this represents within the ROI, the populations of each county were added to the estimate of the on-post population. When -20,144 was divided by the ROI population of approximately 825,000 people, the percentage of population change was determined to be -2.44 percent, which falls outside of the EIFS significance threshold value and would, therefore, be predicted to be significant.

Socioeconomic Impacts. Installation population loss under the Proposed Action would negatively impact regional economies. Cities, towns, and counties in the ROI, whose economies are supported by military employment, contribute to local and regional employment and economic activity and could be adversely affected.

An installation principally affects local communities through salaries paid to Soldier and civilian employees, and subsequently spent in the local economy; and through procurements in the local economy, which can include purchases and contracts. Installation personnel reductions would be expected to result in adverse economic impacts due to the loss of jobs, income, and sales in an affected region.

In addition, adverse impacts to regional community services and schools could occur because they receive funding, support, time, donations, and tax revenue directly related to the installation military authorizations and their dependents. The housing market, public health and safety services, Family support services, and recreational facilities could also be affected. Most Army installations included in this analysis have a considerable percentage of the Soldier and civilian population that rents or owns homes off post. Increases or decreases in the number of Army personnel assigned to a given installation can, therefore, have direct impacts on housing demand and the local housing market. In addition, the need for public services and recreational facilities in the surrounding communities can also fluctuate with Army stationing decisions.

Installation population gains would represent beneficial economic impact within the ROI. Gains also can have variable impacts to school districts with regard to student population. It would be anticipated that most Soldiers would be accompanied by their Families and that there would be an increase in school student population growth; this increase could also result in more impact aid for the schools.

Environmental Justice (E.O. 12898) analysis requires federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of federal agency programs, policies, and activities on minority and low-income populations. Minority populations are identified as Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and other Pacific Islander, Hispanic, of two or more races, and other. The Proposed Action may have disproportionate or adverse health impacts on low-

[12] 2009 employment estimates were the latest employment estimates that were universally available for all counties and parishes within the installation ROI; these numbers were obtained from the U.S. Census quickfacts website (http://quickfacts.census.gov/qfd/index.html).

income or minority populations in that it may involve adverse economic impacts to communities with higher minority populations than the state as a whole. Within the ROI, however, the economic effect would be distributed among community members regardless of race, ethnic origin, or economic status, and therefore is not disproportionate.

In addition, E.O. 13045 requires federal agencies to identify and assess environmental health risks and safety risks that may disproportionately affect children. Such risks to health and safety are attributable to products or substances that a child would be likely to come in contact with or ingest. The impacts of the alternatives are not projected to have disproportionate adverse impacts on children, because no aspects of the action would be anticipated to increase the risks described in the E.O.

Significant impacts would include:

- Long-term substantial loss or displacement of recreational opportunities and resources relative to baseline;
- Substantial disproportionate environmental health or safety risk to children;
- Substantial increased public safety hazard from military operations;
- A regional job decline or regional income decline that exceeds 5 percent according to the RECONS model;
- Indication from Economic Modeling that impact to the economy would exceed RTV or historical precedent for past economic fluctuation for employment and regional income; and
- Substantial disproportionate adverse environmental economic, social, or health impacts on minority or low-income populations.

Energy Demand and Generation

The primary sources of energy on Army installations are electricity, natural gas, fuel oil, propane, and to a much lesser extent, solid fuels, such as coal and wood. Army installations use all of these forms of energy. Choices regarding energy can extend to selection of type of fuel, conservation measures, availability, costs, or consumption rates. Energy consumption is perhaps the major infrastructure and budgetary challenge to Army leadership, encompassing both domestic challenges and garrison and tactical challenges abroad. Power generation, transmission, and use have major economic, environmental, and mission implications (Canton, et al., 2006). Changes in installation stationing, could result in changes to installation energy use. Significant impacts would occur if the energy demands of the Proposed Action exceed the capacity of existing transmission infrastructure or the generating capacity of the energy provider.

Land Use Conflicts and Compatibility

Land use refers to the planned development of property to achieve its highest and best use and to ensure compatibility among adjacent uses. In the Army, land use planning is the mapping and planned allocation of the use of all installation lands based on established land use categories and criteria (Canton, et al., 2006).

The land use planning process is iterative because it needs feedback and ideas from the installation unit, tenant organizations, and residents. Land use planning is used on a continuing basis as a component of real property master planning.

An installation's Real Property Master Plan, which typically covers a 20-year planning horizon, is focused on the management and development of real property resources. This plan should contain information that is vital for addressing cumulative effects on land use. The Real Property Master Plan analyzes and integrates the plans prepared by the Director of Public

Works and other garrison staff, mission commanders, and other tenant activities, higher headquarters, and those of neighboring communities to provide for orderly development, or in some cases, realignment and closure of real property resources (DA, AR 210-20, May 2005).

Change to land use under the Proposed Action could occur if additional land has to be converted to use for training or if land currently used for administrative buildings is converted to another use when the buildings are eliminated. Such changes would be reflected through changes to the master plan.

Significant impacts generally would occur when more than 5,000 acres of land is removed from public use. This amount is a matter of context and intensity, however, and could vary depending on the size of the installation.

Hazardous Materials and Hazardous Waste

Hazardous material is defined as any substance with the physical properties of ignitability, corrosivity, reactivity, or toxicity that might cause an increase in mortality, serious irreversible illness, and incapacitating reversible illness or that might pose a substantial threat to human health or the environment. Hazardous waste is defined as any solid, liquid, contained gaseous, or semisolid waste or any combination of wastes that poses a substantial present or potential future hazard to human health or the environment.

Evaluation of environmental impacts from hazardous materials and wastes focuses on underground storage tanks (USTs) and aboveground storage tanks (ASTs) and the storage, transport, and use of pesticides and herbicides; fuels; petroleum, oils, and lubricants (POLs), and a variety of chemicals. Impacts also may occur with the generation, storage, transportation, and disposal of hazardous wastes when such activities occur at or near the project site of a Proposed Action. In addition to being a threat to humans, the improper release of hazardous materials and wastes can threaten the health and well-being of wildlife species, botanical habitats, soil systems, and water resources. In the event of a release of a hazardous materials or wastes, the extent of contamination varies based on type of soil, topography, and water resources.

In general, hazardous material and hazardous waste issues are governed by such statutes as the Resource Conservation and Recovery Act (RCRA), Toxic Substances Control Act (TSCA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), CAA, CWA, Safe Drinking Water Act (SDWA), Federal Facilities Compliance Act, Military Munitions Rule, and Federal Hazardous Materials Transportation Law. ARs and E.O.s have also been established pursuant to these and subsequent federal and state regulations.

Special hazards are those substances that might pose a risk to human health but are not regulated as contaminants under the hazardous waste statutes. Included in this category are asbestos, radon, lead-based paint (LBP), polychlorinated biphenyls (PCBs), and unexploded ordnance (UXO). The presence of special hazards or controls over them may affect or be affected by implementation of the stationing actions described in this PEA. Information on special hazards describing their locations, quantities, and condition assists in determining the significance of the effects of the Proposed Action.

Significant impacts would occur when substantial additional risk to human health or safety would be attributable to Army actions.

Table 4.0.4-5 shows examples of hazardous materials and hazardous waste issues that could occur as a result of the Proposed Action alternatives.

Table 4.0.4-5. Facilities: Hazardous Materials and Waste Issues

Action Alternative	Issues
Use of Existing Facilities	Underground storage tanks maintenance and replacement
	Existing lead-based paint
	Existing asbestos
	Existing equipment with polychlorinated biphenyls
	Radon
Renovation of Existing Facilities	Underground storage tanks replacement and disposal
	Lead-based paint removal and disposal
	Asbestos disposal
	Replacement of polychlorinated biphenyls-containing equipment
	Radon
Demolition of Existing Facilities	Underground storage tank disposal
	Lead-based paint disposal
	Asbestos disposal
	Disposal of polychlorinated biphenyls-containing equipment
Construction of New Facilities	Installation of underground storage tanks
	Radon

USACE, 2002. Final Programmatic Environmental Impact Statement for Army Transformation. Prepared by USACE Mobile District. February, 2002.

Traffic and Transportation

Traffic and transportation systems refer to organized means of moving people and commodities (Canter et al., 2006). Principal transportation systems include commercial air carriers, waterway and maritime shipping, railroads, and trucking. Movement of people by privately owned vehicles (POVs) on a local or regional scale is related to traffic and circulation. In many instances, the location and availability of transportation system hubs and their capacities, can affect or be affected by installation activities. The smooth flow of traffic and the adequacy of on post and off post road networks to move people efficiently contribute materially to the quality of the human environment in the vicinity of the installation. Unless mitigation measures are implemented, increased volume can pose an additional risk to the safety of pedestrians and bicyclists.

Traffic impacts could include congestion and delays on public roadways and key access points within and near the installation. In the event that an installation is selected to receive additional Soldiers, site-specific traffic studies may be required.

Significant impacts would generally occur when a reduction by more than two Levels of Service (LOS) at roads and intersections within the ROI occurs.

4.0.5 Cumulative Effects Analysis Methodology

CEQ regulations implementing NEPA define a "cumulative impact" as follows:

> "*Cumulative impact is the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (federal or*

> *non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 CFR §1508.7)."*

EPA guidance to reviewers of cumulative impacts analyses further adds:

> *"…the concept of cumulative impacts takes into account all disturbances since cumulative impacts result in the compounding of the effects of all actions over time. Thus, the cumulative impacts of an action can be viewed as the total effects on a resource, ecosystem, or human community of that action and all other activities affecting that resource no matter what entity (federal, non-federal or private) is taking the action (EPA, 1999)."*

For the purposes of this PEA, significant cumulative impacts would occur if incremental impacts of the Proposed Action, added to the environmental impacts of past, present, and reasonably foreseeable actions, would exceed significance thresholds for resources at an installation and the surrounding regions. The Army considered a wide range of past, present, and reasonably foreseeable future actions by researching existing literature and contacting local area planners and state and federal agencies to identify other projects in the region of each installation that could contribute to cumulative environmental impacts. The Army considered other past, present, or foreseeable future actions regardless of whether the actions are similar in nature to the Proposed Action or outside the jurisdiction of the Army.

Cumulative impacts are addressed within each installation section following the discussion of environmental consequences for each alternative. This installation cumulative effects analysis offers a fuller understanding of resource conditions that implementation of the Proposed Action might magnify, amplify, or otherwise exacerbate or cause beneficial or adverse impacts to resources on a regional or long-term scale. There are few impacts from actions proposed for installations that when taken together have the potential to cause a nationwide cumulative impact. These few potential impacts are discussed in Section 4.24.

Generally, installation analyses included past and present impacts in the discussion of the affected environment, and, therefore, most of the cumulative impacts discussion addresses reasonably foreseeable future actions.

Programmatic Environmental Assessment for Army 2020 Force Structure Realignment

Chapter 5, Acronyms
Chapter 6, List of Preparers
Chapter 7, References
Appendix A, Summary of Economic Impacts

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Assisted by:
Potomac-Hudson Engineering, Inc.
Gaithersburg, MD 20878

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5 Acronyms

Acronym	Definition
AAFES	Army Air Force Exchange Service
ABCT	Armored Brigade Combat Team
ACP	Access Control Points
ACS	Army Community Services
ACUB	Army Compatible Use Buffers
ADNL	A-weighted DNL
AGL	above ground level
AICUZ	Air Installation Compatibility Use Zones
AIRFA	American Indian Religious Freedom Act
AIT	Advanced Individual Training
AMF	Army Modular Force
AQCR	Air Quality Control Region
AR	Army Regulation
ARAC	Army Radar Approach Control
ARC	Army Reconnaissance Course
ARPA	Archaeological Resources Protection Act
ASIP	Army Stationing and Installation Plan
ASP	Ammunition Supply Point
AST	aboveground storage tank
AWWU	Anchorage Water and Wastewater Utility
BCT	Brigade Combat Team
BEB	Brigade Engineer Battalion
BfSB	Battlefield Surveillance Brigade
BLM	Bureau of Land Management
BMP	Best Management Practice
BRAC	Base Realignment and Closure
CAA	Clean Air Act
CAB	Combat Aviation Brigade
CACTF	Combined Arms Collective Training Facility
CALFEX	Combined Arms Live-Fire Exercise
CAPs	Criteria Air Pollutants
CCD	Census County Divisions
CDC	Child Development Center
CDNL	C-weighted DNL
CDPHE	Colorado Department of Public Health and Environment
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFA	controlled firing areas
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CRM	Cultural Resources Manager

CRMP	Cultural Resources Management Program
CSA	Chief of Staff of the Army
CWA	Clean Water Act
CWW	Columbus Water Works
DA	Department of the Army
DANC	Development Authority of the North Country
dB	decibels
dBA	A-weighted decibel
dBC	C-weighted frequency
DEIS	Draft Environmental Impact Statement
DFMWR	Directorate of Family Morale Welfare and Recreation
DMDC	Defense Manpower Data Center
DMR	Dillingham Military Reservation
DNL	day-night average level
DoD	Department of Defense
DPW	Directorate of Public Works
DRMO	Defense Reutilization and Marketing Office
DSG	Defense Strategic Guidance
DTA	Donnelly Training Area
EIFS	Economic Impact Forecast System
EIS	Environmental Impact Statement
EMU	ecological management units
E.O.	Executive Order
EOD	explosives ordnance disposal
EPA	Environmental Protection Agency
EPACT	Energy Policy Act of 2005
EPEC	El Paso Electric Company
EPGC	El Paso Gas Company
EPWU	City of El Paso Water Utility
ERF	Eagle River Flat
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESMP	Endangered Species Management Plan
FAA	Federal Aviation Administration
FDU	Force Design Update
FNSI	Finding of No Significant Impact
FMWA	Family Morale Welfare and Recreation
FORSCOM	Forces Command
FRA	Fort Richardson
FRP	Facility Reduction Program
FWA	Fort Wainwright
FY	Fiscal Year
GDPR	Global Defense Posture Realignment
GHG	greenhouse gas
GHMTA	Good Hope Maneuver Training Area
GIS	geographic information system
gpd	gallons per day
gpm	gallons per minute

GRTA	Gerstle River Training Area
H_2S	hydrogen sulfide
HAP	Hazardous Air Pollutant
HET	Heavy Equipment Transports
HMA	Housing Market Analysis
HMMP	Hazardous Material Management Program
HMMWV	High Mobility Multi-Purpose Wheeled Vehicle
HWMP	Hazardous Waste Management Program/Plan
I-	Interstate
IBCT	Infantry Brigade Combat Team
ICRMP	Integrated Cultural Resources Management Plan
ICUZ	Installation Compatible Use Zone
INRMP	Integrated Natural Resources Management Plan
IONMP	Installation Operational Noise Management Program
ISR	intelligences, surveillance, and reconnaissance
ITAM	Integrated Training Area Management
IUA	Intensive Use Area
IWTF	Industrial Waste Treatment Facility
JBER	Joint Base Elmendorf-Richardson
JBLE	Joint Base Langley-Eustis
JBLM	Joint Base Lewis-McChord
JLUS	Joint Land Use Study
JRTC	Joint Readiness Training Center
KLOA	Kawailoa Training Area
KMA	Keamuku parcel
KTA	Kahuku Training Area
kV	kilovolt
kWh	kilowatt-hour
LBP	lead-based paint
L_{dn}	day-night average sound level
LFX	live-fire exercises
LOS	Level of Service
LRAM	Land Rehabilitation and Maintenance
LUA	Limited Use Area
LUPZ	Land Use Planning Zone
MBTA	Migratory Bird Treaty Act
MCoE	Maneuver Center of Excellence
$\mu g/m^3$	micrograms per cubic meter
µPa	micro-Pascal
MEB	Maneuver Enhancement Brigade
METL	Mission Essential Task List
mgd	million gallons per day
MGS	Mobile Gun System
MILCON	Military Construction
MIM	Maneuver Impact Mile
MLRS	Multiple Launch Rocket Systems
mm	millimeter
MMBTU	million British Thermal Units

MMPA	Marine Mammal Protection Act
MMR	Makua Military Reservation
MOAs	Military Operations Areas
mph	miles per hour
MPRC	Multi-purpose Range Complex
MS4	Municipal Separate Storm Sewer System
MSA	Metropolitan Statistical Area
MSDS	Material Safety Data Sheet
MSL	mean sea level
MW	megawatt
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Reparation Act
NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NHL	National Historic Landmark
NMFS	National Marine Fisheries Service
NMS	National Military Strategy
NNSR	Nonattainment New Source Review
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSR	New Source Review
NSS	National Security Strategy
NTC	National Training Center
NWI	National Wetlands Inventory
NZ	Noise Zone
O_3	ozone
OSHA	Occupational Safety and Health Administration
OU	Operable Units
PAL	Privatization of Army Lodging
PCBs	polychlorinated biphenyls
PCEs	primary constituent element
pCi/L	Picocuries per liter
PCMS	Piñon Canyon Maneuver Site
PCS	permanent change of station
PEA	Programmatic Environmental Assessment
PEAFLW	Programmatic Environmental Assessment of the Ongoing Mission – U.S. Army Maneuver Support Center and Fort Leonard Wood
PEIS	Programmatic Environmental Impact Statement
PHC	Public Health Command
PK15(met)	peak sound pressure level
PM	particulate matter
PM2.5	particulate matter whose diameter is less than or equal to 2.5 micrometers
PM10	particulate matter whose diameter is less than or equal to 10 micrometers
PN	Project Number
POLs	petroleum, oils, and lubricants

POV	privately owned vehicle
ppb	parts per billion
ppm	parts per million
PRG	Preliminary Remediation Goals
PSD	Prevention of Significant Deterioration
PTA	Pohakuloa Training Area
QDR	Quadrennial Defense Review
R	Restricted Area
RCI	Residential Community Initiative
RCRA	Resource Conservation and Recovery Act
RCW	red-cockered woodpecker
RECONS	Regional Economic System
ROD	Record of Decision
ROI	region of influence
ROW	right-of-way
RTLA	Range and Training Land Assessment Program
RTV	Rational Threshold Value
RYFO	Resumption of Year-Round Firing Opportunities
SAC	Small Arms Complex
SBCT	Stryker Brigade Combat Team
SBER	Schofield Barracks East Range
SBMP	Schofield Barracks Main Post
SBMR	Schofield Barracks Military Reservation
SDWA	Safe Drinking Water Act
SFG	Special Forces Group
SHPO	State Historic Preservation Officer
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SLUA	Special Limited Use Area
SMA	Special Management Area
SO_2	sulfur dioxide
SO_x	sulfur oxides
SOPs	Standard Operating Procedures
SPCC	Spill Prevention, Control, and Countermeasures
SUSBDE	Sustainment Brigade
SUA	Special Use Airspace
SWMP	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan
TAA	Total Army Analysis
TAMC	Tripler Army Medical Center
TC	Training Circular
TCP	Traditional Cultural Property
TCFE	Transportation Center Fort Eustis
TDY	temporary duty
TFTA	Tanana Flats Training Area
TLEP	Training Land Expansion Program
TMDL	total maximum daily load
TPDES	Texas Pollutant Discharge Elimination

tpy	tons per year
TRADOC	Training and Doctrine Command
TSCA	Toxic Substances Control Act
TVA	Tennessee Valley Authority
U.S.	United States
UAS	Unmanned Aerial System
UIC	underground injection control
USACE	U.S. Army Corps of Engineers
USAG	U.S. Army Garrison
USAG FWA	U.S. Army Garrison Fort Wainwright
USAG-HI	U.S. Army Garrison Hawai'i
USARAK	U.S. Army Alaska
USC	United States Code
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
UXO	unexploded ordnance
VDOT	Virginia Department of Transportation
VEC	Valued Environmental Component
VOC	volatile organic compound
WMD	weapons of mass destruction
WWTP	wastewater treatment plant
YTA	Yukon Training Area

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6 List of Preparers

6.1 Installation Points of Contact

Name	Installation, Affiliation, or Organization	Role	Degree	Years of Experience
John Brown	Fort Benning IMBE/PWE	NEPA Program Manager	A.A., General Studies	11
Tracy Ferring	Fort Benning IMBE/PWE	NEPA Analysis/Writer	M.S., Environmental Science B.S., Major Geology, Minor Chemistry	4
John Barrera	Fort Bliss DPW-E	NEPA Program Manager	B.A., Biology	25
Ginny Carswell	Fort Bragg DPW-E	NEPA Program Manager	M.S., Agriculture	8
Gene Zirkle	Fort Campbell DPW-E	NEPA Program Manager	M.S., Biology	22
Deb Owings	Fort Carson DPW-ED	NEPA Program Manager	M.S., Biology	9
Cait Schadock	Fort Drum PW Environmental Division	NEPA Program Manager	B.A., Anthropology/Biology	25
Robert Drumm	Fort Gordon DPW-E	Chief, Natural Resources Branch/ NEPA Program Manager	M.S., Biology	16
Kimberly Musser	Fort Hood	NEPA Specialist	B.S., Communication	8
John Baker	Fort Irwin DPW-E	NEPA Program Manager	M.S., Ecology	22
Linda Serret	Joint Base Elmendorf-Richardson	NEPA Coordinator	B.A., Environmental Studies JD	4
Stephen Strother	Joint Base Langley-Eustis (Eustis) 733 CED/CEA/EE	NEPA Program Manager	B.A., Geography	7
Bill Van Hoesen	Joint Base Lewis-McChord, WA	NEPA Program Manager	B.S., Forest Management	31
Mike Hasty	Fort Knox DPW-EMD	NEPA Program Manager	B.S., Geosciences	9
Carol Anderson	Fort Lee DPW-E	Environmental Chief	B.A., Geography	22
Dana Bradshaw	Fort Lee DPW-E	Natural Resources Manager	M.A., Biology	27
Andrew Duggan	Fort Lee	Air Quality Program	M.S., Environmental	12

Name	Installation, Affiliation, or Organization	Role	Degree	Years of Experience
	DPW-E	Manager		
Debbie Kilpatrick	Fort Lee DPW-E	NEPA Program Manager	1800 Hours Professional Development	15
Corienne Reisch	Fort Lee DPW-E	NEPA Intern	B.A., Geography	1
Amy Wood	Fort Lee DPW-E	Cultural Resources Manager	M.A., Archaeology and Heritage	15
Angela K. Rinck	Fort Leonard Wood DPW Environmental Division	NEPA Program Manager	M.S., Fisheries & Wildlife B.S., Biology	8
Elizabeth Hoyt	Fort Polk DPW/ENRMD	NEPA Program Manager	B.S., Biology	8
Monte Metzger	Fort Riley DPW-E	NEPA Program Manager	B.S., Forestry	9
Alvin Char	US Army Garrison, Hawai'i	Chief, Environmental Program	M.S., Public Health B.S., Biology	30
Lee Silverstrim	Fort Sill DPW-Environmental Quality Div	NEPA Coordinator/ Solid Waste and Stormwater Programs Manager	Environmental Science	20
Amber Franks	Fort Stewart/Hunter Army Airfield, DPW-Environmental Division	NEPA Program Manager	MBA, Business Administration	10
Melissa Kendrick	Fort Stewart/Hunter Army Airfield, DPW-Environmental Division	NEPA Specialist/ Cumulative Impacts Analyst	M.S., Environmental Analysis and Management	15
Carrie McEnteer	Fort Wainwright	NEPA Program Manager	B.S., Watershed Science	15

6.2 Army Environmental Command

Name	Installation, Affiliation, or Organization	Role	Degree	Years of Experience
Mike Ackerman	US Army Environmental Command	NEPA Program Manager	M.S., Conservation Biology	8

6.3 Potomac-Hudson Engineering Team

Name	Installation, Affiliation, or Organization	Role	Degree	Years of Experience
Paul DiPaolo	Potomac-Hudson Engineering, Inc.	EA Reviewer/Document Manager	B.S., Environmental Science and	2

Name	Installation, Affiliation, or Organization	Role	Degree	Years of Experience
			Policy	
Robin Griffin	Potomac-Hudson Engineering, Inc.	EA Reviewer	M.S., Environmental Management B.A., English Composition	20
Jamie Martin-McNaughton	Potomac-Hudson Engineering, Inc.	Sharepoint Coordinator	B.S., Geology-Biology	6
Robert Naumann	Potomac-Hudson Engineering, Inc.	EA Reviewer	M.S., Environmental Science B.S., Natural Resources	13
Melissa Sanford	Potomac-Hudson Engineering, Inc.	EA Reviewer	B.S., Meteorology B.S., Business Management	5
Rachel Spangenberg	Potomac-Hudson Engineering, Inc.	EA Reviewer	B.S., Biology	23
Debra Walker	Potomac-Hudson Engineering, Inc.	Project Manager/QA/QC Manager	B.S., Biology	35

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Appendix A
Socioeconomics Summary Charts

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Economic Index Forecast System (EIFS) Summary Table: Army 2020 Force Structure Realignment

	Projected Economic Impact and RTV- Alternative 2					Projected Economic Impact and RTV- Alternative 1				
Installation Name	**Military Population Gain**	**Sales**	**Income**	**Employment**	**Population**	**Military Population Loss**	**Sales**	**Income**	**Employment**	**Population**
Fort Benning	no gain	no gain	no gain	no gain	no gain	-7,074	-3.16 (10.55 to -7.34)	-4.99 (10.01 to -6.01)	-5.94 (5.03 to -8.29)	-5.74 (2.58 to -1.56)
Fort Bliss	3,000	0.88 (7.98 to -7.15)	0.82 (8.07 to -6.54)	1.34 (3.9 to -4.29)	0.70 (1.21 to -1.66)	-8,000	-2.34 (7.98 to -7.15)	-2.18 (8.07 to -6.54)	-3.59 (3.9 to -4.29)	-1.87 (1.21 to -1.66)
Fort Bragg	no gain	no gain	no gain	no gain	no gain	-8,000	-4.09 (12.36 to -6.8)	-3.13 (9.14 to -5.96)	-5.34 (6.62 to -7.5)	-3.53 (2.36 to -0.7)
Fort Campbell	3,000	2.78 (13.63 to -8.6)	2.34 (12.75 to -6.99)	3.87 (11.51 to -5.25)	2.70 (7.59 to -1.62)	-8,000	-7.42 (13.63 to -8.6)	-6.24 (12.75 to -6.99)	-10.32 (11.51 to -5.25)	-7.19 (7.59 to -1.62)
Fort Carson	3,000	0.81 (7.56 to -8.16)	0.72 (8.06 to -7.74)	1.37 (3.74 to -4.23)	0.92 (3.21 to -1.57)	-8,000	-2.16 (7.56 to -8.16)	-1.93 (8.06 to -7.74)	-3.66 (3.74 to -4.23)	-2.44 (3.21 to -1.57)
Fort Drum	3,000	2.9 (15.54 to -5.73)	2.64 (13.09 to -4.00)	4.71 (5.29 to -3.23)	3.02 (3.18 to -0.88)	-8,000	-7.73 (15.54 to -5.73)	-7.10 (13.09 to -4.00)	-12.56 (5.29 to -3.23)	-8.06 (3.18 to -0.88)
Fort Gordon	no gain	no gain	no gain	no gain	no gain	-4,317	-3.04 (9.85 to -10.61)	-2.62 (6.53 to -5.85)	-4.66 (3.95 to -9.52)	-3.11 (2.23 to -1.42)
Fort Hood	3,000	1.16 (9.48 to -8.15)	1.09 (6.84 to -7.66)	1.68 (4.01 to -3.43)	1.18 (4.57 to -1.14)	-8,000	-3.10 (9.48 to -8.15)	-2.90 (6.84 to -7.66)	-4.49 (4.01 to -3.43)	-3.15 (4.57 to -1.14)
Fort Irwin	no gain	no gain	no gain	no gain	no gain	-2,375	-0.38 (13.48 to -5.93)	-0.27 (12.75 to -4.33)	-0.60 (3.64 to -3.85)	-0.30 (3.64 to -2.16)
Joint Base Elmendorf-Richardson	1,000	0.67 (18.14 to -12.89)	0.67 (17.02 to - 10.77)	0.90 (9.94 to -3.67)	0.85 (5.46 to -2.08)	-4,341	-2.93 (18.14 to -12.89)	-2.93 (17.02 to -10.77)	-3.90 (9.94 to -3.67)	-3.7 (5.46 to -2.08)
Joint Base Langley-Eustis	no gain	no gain	no gain	no gain	no gain	-2,730	-0.94 (10.81 to -8.18)	-0.96 (10.06 to -6.52)	-1.71 (2.96 to -2.88)	-1.34 (3.28 to -1.00)
Joint Base Lewis-McChord	no gain	no gain	no gain	no gain	no gain	-8,000	-2.61 (8.95 to -6.14)	-1.37 (9.02 to -5.88)	-3.19 (2.56 to -8.09)	-1.92 (2.36 to -2.77)
Fort Knox	1,000	1.69 (9.11 to -7.48)	1.58 (9.23 to -6.42)	2.52 (7.08 to -6.99)	1.75 (6.62 to -4.53)	-3,840	-6.48 (9.11 to -7.48)	-6.05 (9.23 to -6.42)	-9.66 (7.08 to -6.99)	-6.67 (6.62 to -4.53)
Fort Lee	no gain	no gain	no gain	no gain	no gain	-2,432	-1.57 (12.76 to -8.35)	-1.48 (12.40 to -6.17)	-2.22 (3.24 to -7.97)	-1.77 (3.36 to -0.96)
Fort Leonard Wood	no gain	no gain	no gain	no gain	no gain	-3,864	-8.00 (8.81 to -8.54)	-6.75 (8.02 to -7.81)	-11.21 (5.85 to -6.2)	-7.5 (4.25 to -3.17)
Fort Polk	1,000	0.81 (8.90 to -9.28)	0.81 (7.17 to -7.71)	1.41 (5.1 to -5.15)	0.88 (3.43 to -2.42)	-5,316	-4.31 (8.90 to -9.28)	-4.30 (7.17 to -7.71)	-7.53 (5.1 to -5.15)	-4.70 (3.43 to -2.42)
Fort Riley	3,000	4.40 (10.72 to -8.95)	5.04 (9.16 to -8.19)	6.54 (5.48 to -3.60)	5.57 (8.06 to -2.81)	-8,000	-11.75 (10.72 to -8.95)	-13.45 (9.16 to -8.19)	-17.71 (5.48 to -3.60)	-14.9 (8.08 to -2.81)
Schofield Barracks	1,500	0.26 (11.96 to -4.16)	0.37 (10.83 to -4.04)	0.68 (3.64 to -1.78)	0.38 (3.50 to -0.94)	-8,000	-1.38 (11.96 to -4.16)	-1.99 (10.83 to -4.04)	-2.89 (3.64 to -1.78)	-2.03 (3.50 to -0.94)
Fort Sill	no gain	no gain	no gain	no gain	no gain	-4,714	-9.23 (9.92 to -12.21)	-8.45 (8.63 to -10.04)	-13.61 (7.24 to -5.25)	-9.50 (7.77 to -3.75)
Fort Stewart	3,000	8.06 (27.26 to -12.15)	4.62 (8.46 to -6.26)	8.27 (18.58 to -7.34)	5.17 (4.56 to -2.63)	-8,000	-21.48 (27.26 to -12.15)	-12.32 (8.46 to -6.26)	-22.04 (18.58 to -7.34)	-13.8 (4.56 to -2.63)
Fort Wainwright	1,000	2.72 (40.5 to -19.03)	2.12 (40.42 to -15.15)	3.82 (23.35 to -6.65)	2.58 (7.01 to -1.68)	-4,915	-13.36 (40.5 to -19.03)	-10.45 (40.42 to -15.15)	-18.80 (23.35 to -6.65)	-12.68 (7.01 to -1.68)

EIFS analysis by USACE, Mobile District; EIFS data from 1969-2000; Rational Threshold Value (RTV) with historical RTV range; Red indicates a potentially significant socioeconomic impact
Preparation/Revision: December 22, 2011; December 30, 2011; January 20, 2012; January 30, 2012; July 8, 2012

Region Economic System (RECONS) Summary Table: Army 2020 Force Structure Realignment

		Gain Scenario/Impact				Loss Scenario/Impact			
Installation Name	Total Installation Population FY 2011	Military Population Gain	Regional Sales Volume Impact	Regional Job Impact	Regional Income Impact	Military Population Loss	Regional Sales Volume Impact	Regional Job Impact	Regional Income Impact
Fort Benning	39,243	no gain	no gain	no gain	no gain	- 7,074	-2.51	-5.93	-5.23
Fort Bliss	32,352	3,000	0.58	1.27	0.82	-8,000	-1.56	-3.39	-2.20
Fort Bragg	56,983	no gain	no gain	no gain	no gain	-8,000	-2.56	-4.71	-2.97
Fort Campbell	32,425	3,000	2.80	3.98	2.58	-8,000	-7.48	- 10.63	- 6.88
Fort Carson	25,823	3,000	0.54	1.29	0.70	-8,000	-1.42	-3.4	-1.88
Fort Drum	19,079	3,000	2.76	4.75	2.86	-8,000	-7.35	-12.65	-7.63
Fort Gordon	13,864	no gain	no gain	no gain	no gain	-4,317	-2.19	-4.31	-2.61
Fort Hood	47,437	3,000	0.92	1.62	1.12	-8,000	-2.45	-4.33	-2.99
Fort Irwin	5,539	no gain	no gain	no gain	no gain	-2,375	-0.23	-0.58	-0.50
Joint Base Elmendorf-Richardson	6,923	1,000	0.27	0.75	0.45	-4,341	-1.26	-3.28	-2.01
Joint Base Langley-Eustis	9,899	no gain	no gain	no gain	no gain	-2,730	-0.83	-1.62	-0.96
Joint Base Lewis-McChord	36,777	no gain	no gain	no gain	no gain	-8,000	-1.80	-3.09	-1.38
Fort Knox	13,665	1,000	1.28	2.33	1.55	-3,840	-5.73	-9.16	-6.80
Fort Lee	16,257	no gain	no gain	no gain	no gain	-2,432	-0.91	-1.99	-1.26
Fort Leonard Wood	27,213	no gain	no gain	no gain	no gain	-3,864	-5.80	-10.25	-6.49
Fort Polk	10,877	1,000	0.52	1.51	0.90	-5,316	-2.75	-6.85	-4.13
Fort Riley	20,009	3,000	3.18	6.17	4.93	-8,000	-8.48	-16.46	-13.16
Schofield Barracks	18,563	1,500	0.20	0.68	0.39	-8,000	-1.10	-2.85	-2.07
Fort Sill	22,444	no gain	no gain	no gain	no gain	-4,714	-9.66	-13.66	-9.22
Fort Stewart	24,622	3,000	7.46	7.93	4.76	-8,000	-19.92	-21.14	-12.70
Fort Wainwright	7,430	1,000	1.40	3.36	1.5	-4,915	-7.13	-16.54	-7.32

RECONS analysis by USACE, Mobile District
Impact:

- Total direct and secondary effects at the regional level

Preparation/Revision: December 1, 2011; January 9 – 12, 2012; January 17, 2012; January 30, 2012; July 8, 2012

Programmatic Environmental Assessment for Army 2020 Force Structure Realignment

Chapter 4
Affected Environment
and
Environmental Consequences

Section 4.1 Fort Benning, Georgia
Section 4.2 Fort Bliss, Texas
Section 4.3 Fort Bragg, North Carolina
Section 4.4 Fort Campbell, Kentucky
Section 4.5 Fort Carson, Colorado
Section 4.6 Fort Drum, New York
Section 4.7 Fort Gordon, Georgia

January 2013

Assisted by:
Potomac-Hudson Engineering, Inc.
Gaithersburg, MD 20878

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4.1 FORT BENNING, GEORGIA

4.1.1 Introduction

Fort Benning is located in west Georgia and east Alabama, and consists of approximately 182,000 acres (Figure 4.1-1). Fort Benning land is used for a variety of military training and garrison support activities. Of the currently-owned property, approximately 141,500 acres are primarily designated for training and maneuver areas. Fort Benning is immediately adjacent to the communities of Columbus and Cusseta, Georgia and Phenix City, Alabama.

Fort Benning is home to the Maneuver Center of Excellence (MCoE). As part of the 2005 BRAC actions, the Armor School was relocated from Fort Knox, Kentucky to Fort Benning. This relocation consolidated the Infantry and Armor Centers and Schools to create the MCoE for ground forces training at Fort Benning.

Fort Benning conducts Professional Military Education courses for Armor and Infantry officer and non-commissioned officer educational development, Infantry, Armor and Cavalry Soldier Basic Combat and Advanced Individual Training (AIT), Airborne (parachute) Training, Ranger Training as well as 25 functional Training Courses. Fort Benning's major tenant units are the 3rd ABCT 3rd Infantry Division (3-3rd ABCT) and two battalions, and the Regimental Headquarters of the 75th Ranger Regiment. The units of the Armor School include the 194th Armor Training Brigade and the 316th Cavalry Brigade.

Fort Benning has a well developed and highly used range infrastructure with several unique ranges supporting Special Operations Command units. Overall units training on Fort Benning conduct an average of 117 daily training missions. The construction and operation of numerous new ranges and training facilities were required to support the arrival of the Armor School and associated training requirements. Fort Benning has a total of 86 live-fire and 9 non-live-fire ranges with the surface danger zone acreage of over 15,800 acres. The arrival of the Armor School has increased the already high demand for new and existing ranges and maneuver lands as over 50 percent of TRADOCs institutional training requirements in 19 MCoE, 86 Infantry, and 53 Armor training programs that occur 5-6 days per week for 50 weeks annually. Fort Benning is also facing challenges from growing adjacent urbanization, and from federal and state environmental regulations.

The competition for training lands and compliance with environmental regulations have increased the utilization of limited range and training areas. At the current operational tempo, the 3-3rd ABCT and its supporting units represent about 35 percent of Fort Benning's annual requirement for live-fire and maneuver training requirements. The 3-3rd ABCT requires the use of the Digital MPRC and various other heavy ranges about 240 days and 180 nights annually. The usage competes with newly assigned Armor School training for both live-fire and maneuver training.

Currently, the Army is undergoing a study to assess environmental and socioeconomic impacts of the acquisition of additional training lands in proximity to Fort Benning. *The Training Land Expansion Program (TLEP) Draft Environmental Impact Statement (DEIS)* was published in May 2011 for comment per the requirements of the NEPA. The TLEP Final EIS and final decision on land purchase is deferred until more information is available on Army fiscal and force realignments. This PEA assumes that only current Fort Benning land would be available for Army 2020 alternatives.

In May of 2009, during consultation with the USFWS on the MCoE Proposed Action, Fort Benning received a Jeopardy Biological Opinion from the USFWS. A requirement of the Jeopardy Biological Opinion was the relocation of the Army Reconnaissance Course (ARC) field

training off of Fort Benning within 5 years of its first training iteration to reduce potential impacts from heavy maneuver training.

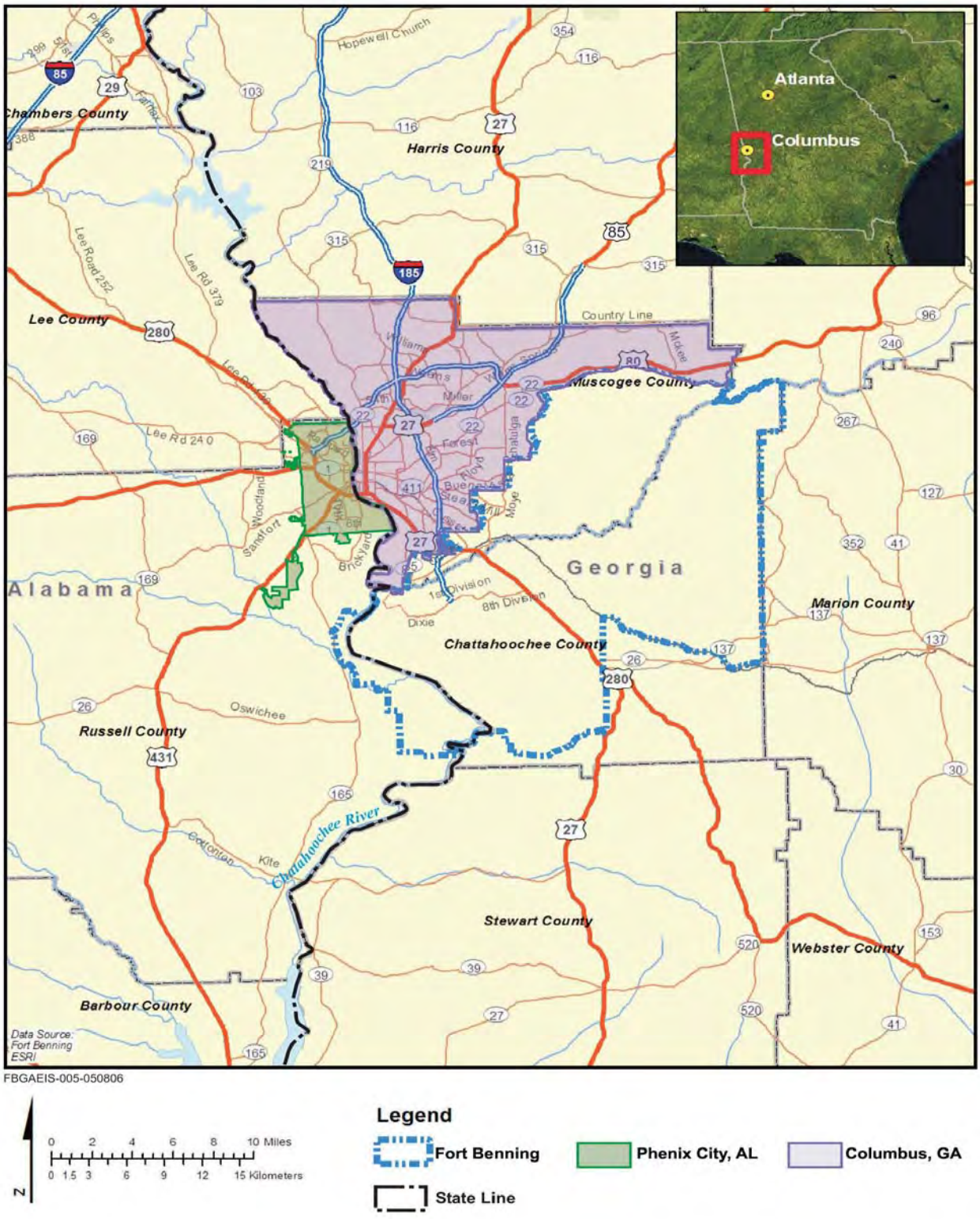

Figure 4.1-1. Fort Benning

The first iteration of ARC training occurred in October of 2011. The Armor School is working closely with Fort Benning biologists to assess potential impacts of training exercises on the red-cockaded woodpecker (RCW) population. If Fort Benning loses units with substantial maneuver land requirements as a result of the implementation of Alternative 1, training activities associated with the ARC could conceivably remain on the installation pending further consultation with the USFWS.

4.1.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Benning does not anticipate any significant adverse environmental impacts; however, significant socioeconomic impacts are anticipated as a result of the implementation of Alternative 1 (Force reduction of up to approximately 7,100 Soldiers and civilians). Table 4.1-1 summarizes the anticipated impacts to VECs from each alternative.

Fort Benning is not being considered under Alternative 2 for the potential stationing of additional Soldiers that would result in a net increase for the installation as there is a lack of capacity and facilities to accommodate additional Soldiers and training requirements in a cost effective manner. It is possible, however, that the BCT stationed at Fort Benning could be restructured. This would be done in a way that would result in no net gain of Soldiers at Fort Benning.

Table 4.1-1. Fort Benning Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 7,100
Air Quality	Minor	Beneficial
Airspace	Minor	Minor
Cultural Resources	Minor	Minor
Noise	Less than Significant	Minor
Soil Erosion	Less than Significant	Minor
Biological Resources	Less than Significant	Minor
Wetlands	Less than Significant	Minor
Water Resources	Less than Significant	Minor
Facilities	Minor	Beneficial
Socioeconomics	Beneficial	Significant
Energy Demand and Generation	Minor	Beneficial
Land Use Conflict and Compatibility	Less than Significant	Minor
Hazardous Materials and Hazardous Waste	Minor	Minor
Traffic and Transportation	Minor	Beneficial

4.1.2 Air Quality

4.1.2.1 Affected Environment

The installation's cantonment areas, training areas, and maneuver areas are included in the project area. The air emission's ROI at Fort Benning is the multi-county airshed to include Muscogee, Chattahoochee, Russell, Lee, Harris, Talbot, and Marion counties. These counties are presently designated by the EPA as in attainment for all required standards for criteria pollutants (except lead in a limited area off post in Muscogee County around a battery plant [USACE, 2009]).

At this time, the region is considered to be in attainment for ozone (O_3), based on the 2008 primary and secondary standards. Motor vehicles (mobile sources) are a primary contributor to ground-level O_3 levels in Georgia.

Per the provisions of the CAA, the EPA is required to review the standards every 5 years (next review slated for 2013) and both the primary and secondary standards for O_3 are anticipated to be revised down to levels that may lead the EPA to designate parts or all of the ROI/airshed as nonattainment. This area designation will likely include at least a part of Fort Benning. Because of this growing concern, further efforts at the state and local level, including reduction planning, may be required to reverse the trend ahead of the EPA's data analysis for designating O_3 nonattainment. Fort Benning would be required to assess actions for general conformity should the area be designated nonattainment for O_3.

Fort Benning also generates area emissions from prescribed fire activities as part of their ongoing ecosystem management program (USACE, 2009). Prescribed burning is the largest single source of criteria pollutant emissions on the installation (Fort Benning 2010); however, it is a critical management tool for fire-dependent natural communities, RCW habitat and training area management. Prescribed burning events on the installation would continue based on a 3 year rotational schedule across the installation (Fort Benning, 2001).

The Georgia and Alabama Forestry Commissions administer each state's Smoke Management Plans, which detail the states' basic frameworks of procedures and requirements for managing smoke from prescribed fires. The purpose of each Smoke Management Plan is to minimize the public health and environmental impacts of smoke intrusion into populated areas from fires; to avoid significant deterioration of air quality and potential CAA violations; and to avoid visibility impacts in Class I PSD areas (GFC, 2008). The closest Class I PSD areas are the Sipsey Wilderness Area, Alabama and Okefenokee Wilderness areas, Georgia, both of which are over 150 miles away from the installation. Fort Benning's prescribed burning activities are conducted in full compliance with these plans.

4.1.2.2 Environmental Consequences

No Action Alternative

Fort Benning anticipates a minor adverse impact to air quality. The Fort Benning ROI is currently in attainment for all criteria pollutants. Any new construction with the potential for emission sources would be required to be included on the installation's Title V permit. If Fort Benning is within a county designated as nonattainment after the 2013 standard review by the EPA, future projects beyond that date would need General Conformity analysis and revision to the Title V permit.

Alternative 1: Force Reduction (up to 7,100 Soldiers and Army Civilians)

Fort Benning anticipates a minor beneficial environmental impact on air quality for the installation and surrounding communities. A decrease in operations and maintenance activities

would be a minor beneficial impact, and would likely have a beneficial impact to regional air quality. The anticipated decrease in operations and maintenance activities would most likely have no effect on Class I PSD areas. Since more than 50 percent of ground level O_3 in the State of Georgia comes from vehicle exhaust, it is reasonable to suggest that a reduction in the number of vehicles associated with the loss of approximately 7,100 Soldiers, civilians, and their Families would reduce the local levels of O_3 somewhat, although emission levels are dependant not only upon reduction in number of vehicles but also upon the miles driven and vehicle type.

Demolition of facilities may have short-term, minor adverse air impacts, but would result in long-term, reduced combustion emissions, also reducing O_3 precursors. It is anticipated that combustion emissions from stationary sources would decrease with the relocation of units into newer facilities and the demolition of older facilities.

4.1.3 Airspace

4.1.3.1 Affected Environment

Lawson Army Airfield is the hub for all military aircraft operations in and around Fort Benning, with an average of 35,000 take-off and landing operations per year (ATSCOM DA FORM 3479-6-R). Fort Benning units train with helicopters, fixed wing aircraft and UASs throughout the year at varying frequency and complexity. Most fixed- and rotary-wing tactical aircraft operate out of Lawson Army Airfield, a designated Force Projection Platform. A major portion of the aircraft operations out of Lawson Army Airfield, located at the Southwest corner of Fort Benning, involves airborne jump training. Ranger training uses a combination of both fixed-wing and rotary wing aircraft. Other training events involve small to large scale military training exercises which bring in large and medium size fixed wing cargo aircraft, high performance jets, helicopters, UAS, and other special purpose aircraft throughout the year.

All of these aircraft operations use different classes of airspace designated by the FAA. The classes of airspace designated for Fort Benning are described briefly below.

- **Lawson Class D Airspace:** controlled airspace to terminal visual and instrument flight routes at airports that have a control tower;
- **ASO GA E2 Class E Airspace:** the surface area designated for an airport;
- **Regulatory Special Use Airspace – Restricted Area (R) 3002A through G:** designated to contain artillery, mortars, missiles, and rockets;
- **Non-regulatory Special Use Airspace – Benning MOA:** airspace area designated air combat maneuvers, air intercepts, acrobatics, etc.; and
- **Military Training Routes – Slow Routes 38 and 39:** visual flight routes that are designated for low-altitude tactical training.

The FAA is the controlling agency charged by Congress to administer in the public interest as necessary to ensure the safety of aircraft and its efficient use. Although the FAA must protect the public's right of freedom of transit through the airspace, full consideration shall be given to all airspace users, to include national defense; commercial and general aviation; and space operations. Overall, Fort Benning is responsible for approximately 768 cubic nautical miles of airspace in and around the designated military installation. Currently, the 3-3rd ABCT operates Shadow Tactical Unmanned Aircraft System (RQ-7B) in the SUA.

There are also several commercial and small private airports in the area surrounding Fort Benning that are published in the FAA Airport Registry under the Airport Master Record and Reports. These include the following airports: Columbus Metropolitan, Raju, Jones Light Aviation, Peterson Field, Weedon Field, Sehoy, Flying C's Plantation, and Finkley Farm just to

name a few. The region surrounding Fort Benning contains federal airways as this location is near many major regional and international air carrier hubs, including Hartsfield-Jackson Atlanta International, Macon Middle Georgia Regional, and Albany Southwest Regional. Fort Benning's designated SUA reduces the likelihood of interaction between military aircraft and public, private, or commercial aircraft. UAS vehicles are not allowed to operate outside restricted airspace because they do not have "see and avoid" capability. Training is currently conducted within designated SUA and is conducted within a restricted operating zone which allows unencumbered training flights to meet mission essential training goals.

4.1.3.2 Environmental Consequences

No Action Alternative

Minor adverse impacts to airspace use are anticipated under the No Action Alternative. There is the potential for airspace use conflicts between military and private pilots. UASs would continue to be used at the current operational tempo. Use of airspace would continue to be managed through scheduling and balancing needs with airspace availability.

Alternative 1: Force Reduction (up to 7,100 Soldiers and Army Civilians)

Minor adverse impacts to airspace use are anticipated as a result of the implementation of Alternative 1. There is the potential for airspace use conflicts between military and private pilots. Loss of a ABCT could potentially reduce the number of UASs in operation at Fort Benning. There would be no change in SUA requirements.

4.1.4 Cultural Resources

4.1.4.1 Affected Environment

Cultural resources found within the boundaries of Fort Benning include: archaeological resources, architectural resources and historic districts, and Native American resources. There are 13 federally recognized Tribes affiliated with the Fort Benning area, of which 10 participate in consultation on a bi-annual basis. Management of cultural resources on Fort Benning is accomplished through the installation's Integrated Cultural Resources Management Plan (Fort Benning, 2008). Fort Benning has adopted the Army Alternate Procedures for implementing Section 106 of the NHPA in an effort to improve efficiency in the installation's cultural resources management. The Historic Properties Component established procedures for evaluation of potential effect on historic properties and combining Section 106 consultation with the NEPA process.

Most cultural resources on Fort Benning have been evaluated for eligibility on the NRHP. Those that have not yet been evaluated are considered eligible until they can be evaluated. No properties of religious or cultural significance to the Tribes have been identified on the installation.

4.1.4.2 Environmental Consequences

No Action Alternative

Minor adverse impacts are anticipated on cultural resources under the No Action Alternative. Heavy equipment and tracked vehicles used for off-road maneuvers, and other training could potentially have adverse impacts on archaeological resources. Fort Benning personnel provide maps demarcating cultural resource locations in the training areas for Soldier informational awareness and avoidance. There are also training restrictions and guidelines within these areas to minimize impacts in these areas, (e.g., no digging). Building demolition and renovation are not part of the No Action Alternative; therefore, there would be no adverse impacts from those actions.

Alternative 1: Force Reduction (up to 7,100 Soldiers and Army Civilians)

Minor adverse impacts are anticipated on cultural resources as a result of implementation of Alternative 1. With a decrease of Soldiers and civilians and the potential for units to be relocated to newly vacated facilities, some older buildings on the installation may be programmed for demolition. The adverse impacts from demolition of buildings that are eligible for the NRHP would be mitigated, in accordance with the ICRMP and Army Alternate Procedures. At this time, it is unknown what buildings would be identified for demolition.

Fort Benning anticipates that a decrease in Soldier strength would decrease the training operational tempo and Soldier traffic near archaeological sites; this would reduce potential impacts to those resources within the training and range areas.

4.1.5 Noise

4.1.5.1 Affected Environment

The greatest amount of noise disturbance from Fort Benning is generated from large caliber weapons firing mainly from M1 tank, M2 Bradley Fighting Vehicles, 120mm (millimeter) mortars and 155mm howitzers. Noise is also generated from fixed- and rotary-winged aircraft maneuvers, artillery, various pyrotechnic devices and specialized combat vehicles. Currently, an incompatible NZ III extends into Muscogee and Marion counties where rural residences and communities are located on the northern and eastern boundaries of the installation. Additionally, NZ II extends off post to include Muscogee, Marion, and Talbot counties.

On-post noise impacts have been identified primarily with Family housing. Family housing areas are affected by both NZ II and III noise levels for both small and large caliber weapons. Currently, there are approximately 96 installation housing units within the NZ III noise contour.

In 2003, Fort Benning installed a Blast Analysis and Measurement monitoring sensor site system along the installation boundary. The eight noise monitors are used to verify noise levels when complaints have been received from the public. Data from these monitors can help the installation plan, schedule, and effectively adjust military training exercises to reduce impacts to the community's noise sensitive receptors. The installation's Public Affairs Office notifies the public of training activities involving firing events through public notices issued to local media outlets, local governments, and the Fort Benning public website.

Noise from training activities also has the potential to affect wildlife and threatened and endangered species. For example, some training restrictions and conditions are required to minimize adverse impacts to the RCW population (Fort Benning, 2001). Some noise generating training activities, (e.g., artillery and hand grenade simulators and firing of small caliber weapons), are limited by scheduling restrictions when occurring within RCW cluster boundaries. Other training activities, (e.g., live-fire and incendiary devices), are prohibited altogether within RCW cluster boundaries. Over the past 30 years, several research projects have assessed the potential effects of military noise, primarily from large-caliber ranges and artillery simulators, on certain elements of RCW fitness (USACE, 2008). Generally, the results of these works have demonstrated that noise events (particularly those historic and relatively constant) from military activities have little to no effect on RCW reproductive success.

4.1.5.2 Environmental Consequences

No Action Alternative

Less than significant (moderate adverse) impacts are anticipated due to NZ II and III from operational noise overlapping areas with sensitive noise receptors on and off post. As a result of BRAC/Transformation actions, a number of new small and large arms ranges were constructed

to meet mission training requirements. Current NZ II and III noise contours for small and large caliber weapons are not anticipated to change. Mitigation measures in place to minimize operational noise impacts include noise complaint reporting procedures for the public and posting training schedules for the public when large caliber and/or night-time training events occur.

Alternative 1: Force Reduction (up to 7,100 Soldiers and Army Civilians)

Short-term, minor adverse noise impacts could result from renovation, and or demolition activities that would be identified for the relocation of units on the installation. Impacts from these activities would be localized and would dissipate after renovation or demolition is complete.

Long-term, minor adverse noise impacts would still be associated with training activities on the installation. Noise generated from firing ranges and maneuver areas is not anticipated to change current NZ contours; however, the anticipated decrease in operational tempo would result in less frequent large caliber weapons fire associated with heavy brigade training activities, and may decrease the frequency of night-time training exercises.

Potential noise impacts to the natural environment would also decrease with a reduction of Soldier strength. The anticipated decrease in operational tempo would reduce the number of wheeled and heavy vehicles, Soldier foot-traffic, and use of other military equipment within RCW cluster boundaries.

4.1.6 Soil Erosion

4.1.6.1 Affected Environment

Most of Fort Benning is located south of the Fall Line, which is defined by the overlap of Coastal Plain strata on top of Piedmont rocks. Along the Fall Line Sandhills, crystalline rocks of the Piedmont are overlain by marine or fluvial sediments, resulting in varied topography. The topography across the installation is variable, with generally flat areas along the Chattahoochee River and steeper upland slopes farther inland. Elevations on Fort Benning range from about 170 to 750 feet above MSL.

The six soil associations found at Fort Benning are highly weathered Ultisols of Coastal Plain origin. All soils in the north have a sandy surface and loamy subsoil, and are highly permeable and droughty. The soils in the southwestern part of the installation have a higher water holding capacity, and are loamy sand and clay loam sands. Many soils also have a clayey subsoil. The majority of Fort Benning soils have been identified as highly erodible (USACE, 2009).

Projects involving land disturbance over 1 acre require a stormwater construction permit which would include Best Management Practices (BMPs) to reduce and minimize impacts associated with stormwater runoff, erosion, sedimentation and pollutants. Other projects less than 1 acre may fall under construction BMPs required under the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit.

Approximately 300 new water crossings, culverts and bridges for military vehicles have been constructed as a result of the BRAC/Transformation construction program. The crossings have been established along range and training area roads and include concrete-reinforced tank trail beds through streams and wetlands to minimize impacts to water resources. Additional minimization measures include the design and construction of sediment basins to prevent sedimentation impacts to surface waters and wetlands within heavy maneuver training areas. There is a potential for adverse impacts to water resources due to increased sedimentation directly related to heavy maneuver training.

4.1.6.2 Environmental Consequences

No Action Alternative

Fort Benning anticipates less than significant (moderate adverse) impacts in training areas due to the number of tracked and wheeled vehicles that are currently on the installation. Off-road heavy maneuver training exercises are anticipated to cause the most adverse impact due to the use of tracked vehicles in areas with highly erodible soils. Fort Benning anticipates that the high utilization of maneuver lands by the Armor School and the 3-3rd ABCT could adversely impact soils and increase soil erosion rates. Fort Benning also anticipates that road networks would be susceptible to increased erosion rates due to high traffic volumes of wheeled, heavy, and tracked vehicles traveling to and from training areas.

With the current operational tempo, both on and off-road maneuver areas have less time to naturally recover from training activities. Consequently, training areas could exhibit more soil and vegetation disturbance and become more degraded. This degradation of maneuver areas and road networks would incur high maintenance costs, and could potentially render some training areas unusable for periods of time until training area maintenance activities could be completed.

Erosion and sedimentation concerns represent a substantial threat to long-term viable usage of Good Hope Maneuver Training Area (GHMTA), where the Armor Basic Officer Leaders Course mounted maneuver training is conducted. Highly erodible soil and steep slopes provide indications of potentially serious runoff issues that left unmitigated, would jeopardize training in the maneuver boxes established within the GHMTA.

Fort Benning and the MCoE are aggressively pursuing proactive, preemptive actions to mitigate the risks to the GHMTA to include programming of projects for sedimentation basins, check dams, and rip rap swales in and along stream buffer zones to prevent surface runoff sedimentation into streams. Several low water crossings have inadequate approaches on steep slopes and require supplemental upgrades. Without the upgrades (i.e., extended approaches with articulated concrete “rumble strips”), tracks would not discard soils prior to entering the stream and maneuver damage, with increased erosion, would occur requiring maintenance and repairs based on the extent and location of the damage.

Alternative 1: Force Reduction (up to 7,100 Soldiers and Army Civilians)

Fort Benning anticipates a minor adverse impact to soils with the loss of up to 7,100 Soldiers and civilians. The loss of a ABCT and other Combat Support units would be anticipated to lessen soil erosion and sedimentation potential, but there remains the potential for soil erosion impacts even if these force structure decisions were made. The reduction in wheeled and tracked vehicles, and other heavy equipment traffic on- and off-road, could reduce the impacts on soils and erosion with an anticipated decrease in frequency of training activities. The terrain could show reduced impacts from the vehicle maneuvers, turns and traction from mechanized maneuvering on the installation. These maneuver areas would still be prone to soil erosion depending on the training mission and primary training locations of those remaining units.

A reduction in Soldier strength could result in more effective maintenance operations due to a decrease in training intensity and more access to training lands for repair and maintenance activities. This would be anticipated to enhance the sustainability of training lands throughout Fort Benning. Areas designated specifically for off-road, heavy maneuvers with tracked vehicles (e.g., Armor School), would still experience adverse impacts to soils. When adequately funded, the ITAM program helps sustain training lands via maintenance projects to correct soil erosion problems in heavy maneuver areas.

4.1.7 Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species)

4.1.7.1 Affected Environment

Federal and state threatened and endangered species are known to occur at Fort Benning. Four federally-listed species within the boundaries of Fort Benning and include the RCW (endangered), Wood Stork (endangered), American Alligator (threatened – similarity of appearance), and Relict Trillium (endangered). While the Bald Eagle has been delisted, it is still protected under other federal laws, and has been known to nest along the Chattahoochee River on Fort Benning. State-listed species include the Gopher Tortoise (threatened and proposed for federal listing), Barbour's Map Turtle (threatened), Alligator Snapping Turtle (threatened), and the Blue Stripe Shiner (threatened). In addition, there are 11 state-listed plant species present within the boundaries of Fort Benning (USACE, 2009).

In May 2009, Fort Benning received a Jeopardy Biological Opinion from the USFWS related to the MCoE Biological Assessment. The Jeopardy Biological Opinion outlines specific criteria that must be met in order for the installation to proceed with the actions associated with BRAC and MCoE, including RCW impact minimization measures.

One criterion outlined in the Jeopardy Biological Opinion was the relocation of the ARC field training off the Fort Benning footprint within 5 years of its first training iteration. The requirements to move the ARC was based on the heavy maneuver training initially proposed by the Armor School and the associated potential impacts to RCWs from heavy mechanized training. The ARC training plans have changed substantially from what had originally been proposed and analyzed in the Jeopardy Biological Opinion, to involve fewer days in the training areas and limited use of tracked vehicles.

The first iteration of ARC training occurred in October 2011. The Armor School is working closely with Fort Benning biologists to monitor potential impacts of training exercises on the RCW population. If Fort Benning force structure is reduced as a result of the implementation of Alternative 1; thereby, potentially reducing impacts to the RCW population, training activities associated with the ARC could possibly remain on the installation after reinitiating consultation with USFWS.

The threatened and endangered species recorded on the installation are managed in accordance with the installation Integrated Natural Resources Management Plan (INRMP) and Endangered Species Management Components; and with the requirements identified within Biological Opinions issued by the USFWS.

All birds on Fort Benning except pigeons, starlings and English sparrows (non-native species) are protected under the Migratory Bird Treaty Act (MBTA); however, state regulations allow hunting of certain game species. Fort Benning manages and conserves migratory bird species through its INRMP. There are approximately 150 species of birds protected under the MBTA present on the installation either seasonally or year round. Most of these species are breeding residents or neo-tropical migrants for which the typical breeding season is spring through summer. There are potentially 16 species occurring on Fort Benning considered Species of Concern based on Partners in Flight and Landbird Population Estimates. Fort Benning is currently cooperating with federal, state, and private organizations in gathering information on many migratory bird species in this region. There would be negligible impacts to migratory bird species as a result of either alternative.

4.1.7.2 Environmental Consequences

No Action Alternative

Fort Benning anticipates less than significant (moderate adverse) impacts to threatened and endangered species, particularly the RCW. Although there are specific mitigation criteria for training events, (e.g., no live-fire or heavy mechanized training within RCW cluster boundaries), it has yet to be determined if current training loads would incur any additional impacts to threatened and endangered species, especially by harassment. It is also possible that training impacts may be less than previously anticipated, which could lead to fewer restrictions on training in the future. There would also a potential for moderate adverse effects to vegetation and wildlife. Continued adherence to the INRMP, Biological Opinions and regulatory requirements would minimize impacts.

Alternative 1: Force Reduction (up to 7,100 Soldiers and Army Civilians)

Minor adverse impacts are anticipated as a result of the implementation of Alternative 1. Fort Benning anticipates that the loss of a ABCT would decrease the frequency and intensity of heavy mechanized training on the installation, and reduce potential impacts to vegetation, wildlife, and threatened and endangered species.

Generally, a training reduction could result in reduced impacts to the RCW and its habitat. Fort Benning anticipates that a reduction in the frequency of heavy mechanized training in RCW habitat would decrease the potential for adverse effects to the RCW population due to harassment. This determination would require a more in-depth analysis, however, as it is highly dependent upon the type, location and operational tempo of training. Reorganization of units and their training areas would undergo evaluation to identify any potentially new or reduced impacts to the RCW population and other threatened and endangered species. If additional impacts to federal threatened and endangered species are identified, an issuance of an incidental take permit may be warranted, while reduced impacts may warrant fewer incidental takes than previously determined. This would require further consultation with USFWS.

4.1.8 Wetlands

4.1.8.1 Affected Environment

Fort Benning contains approximately 17,000 acres wetlands based on NWI and jurisdictional wetland delineation. Wetlands on Fort Benning include cypress-tupelo, wood stream swamps, and gum-oak dominated wetlands (USACE, 2009). Currently, all heavy maneuver training activities on Fort Benning avoid wetlands to the degree possible. Additionally, Fort Benning personnel have demarcated buffer zones adjacent to delineated wetlands in some heavy maneuver training areas for Soldier awareness and avoidance.

Wetlands identified as jurisdictional are specifically protected under Section 404 of the CWA. Section 404 permits would be required for construction-related unavoidable impacts to jurisdictional wetlands.

4.1.8.2 Environmental Consequences

No Action Alternative

Less than significant (moderate adverse) impacts to wetlands are anticipated under the No Action Alternative due to the ABCT and the Armor School operational tempo including use of heavy equipment and tracked vehicles. Ranges and training areas are monitored to ensure that there are no significant impacts to wetlands.

Alternative 1: Force Reduction (up to 7,100 Soldiers and Army Civilians)

Minor adverse impacts to installation wetlands are anticipated as a result of the implementation of Alternative 1. As discussed in Section 4.1.6., any reduction in Soldier strength would decrease the number of tracked and wheeled vehicles in areas that may have wetlands and the potential impacts of increased sedimentation caused by training. The frequency of dismounted training activities in wetland areas would be anticipated to decrease.

Fort Benning anticipates that the reduction of heavy mechanized training events would reduce the potential for adverse impacts to wetlands. Specific wetland impacts cannot be determined because it is dependent upon location, type and operational tempo of remaining training after any reduction. Generally, wetland areas are not preferred for heavy maneuver training, but it is likely that rearrangement of remaining units to the training areas would reduce potential impacts to wetlands.

How the Armor School and other tenant units on Fort Benning would utilize current training areas after a force reduction would require further analysis to assess any potentially new impacts to wetlands. It is unlikely that there would be any wetland impacts from renovation or demolition; however, Fort Benning would identify any wetland impacts and would obtain appropriate wetland permits where applicable.

4.1.9 Water Resources

4.1.9.1 Affected Environment

Groundwater. Fort Benning is located within the Coastal Plain hydrogeologic province. The principal groundwater source for Fort Benning is the Cretaceous aquifer system. The recharge area for this aquifer is the Sand Hill cantonment area (Fort Benning, 2004). Aquifers in this area typically have the capacity to yield about 50 gallons per minute (gpm) of water near the Fall Line, but yields increase to approximately 700 gpm near the southern installation boundary (USACE, 2009).

Water Supply. Fort Benning receives the majority of its potable water supply from surface water sources, primarily the Chattahoochee River. The installation's potable water supply system was privatized in September 2004 and is owned and operated by Columbus Water Works (CWW). As a result of BRAC, water infrastructure has been expanded and upgraded throughout the installation. For the more remote training areas, potable water is supplied by a number of drilled wells or transported via transport trailers.

Wastewater. Fort Benning's wastewater system was privatized in September 2004. The ownership, operation, system, and facilities are the responsibility of CWW. As a result of BRAC, sewer infrastructure across the installation has undergone extensive expansion and upgrades. Fort Benning's two wastewater treatment plants (WWTPs) have been replaced with comparable service from CWW. The CWW WWTP has been replaced and expanded to handle a maximum of 17.3 million gallons per day (mgd) (USACE, 2009).

Stormwater. Stormwater discharge in main post drains directly into the Chattahoochee River through a storm drain system. Stormwater from the satellite cantonment areas of Harmony Church, Kelley Hill and Sand Hill, as well as the training compartments, drain directly or indirectly into nearby surface water bodies. Other stormwater on the installation drains via culverts, ditches, swales, and natural seepage and overland flow.

Surface water resources on the installation are subject to contamination from soil sedimentation, oil spills, pesticide residue, and untreated sewage bypasses. These potential pollution sources are controlled and minimized by implementation of installation spill contingency plans,

stormwater pollution control plans, and adherence to applicable laws and regulations. There are several impaired streams located near or on Fort Benning.

4.1.9.2 Environmental Consequences

No Action Alternative

Less than significant (moderate adverse) impacts to water resources are anticipated under the No Action Alternative. As discussed in Section 4.1.6, the installation anticipates some sedimentation impacts to surface waters due to the heavy maneuver training activities of the 3-3rd ABCT and the Armor School. As the majority of Fort Benning is characterized as having highly erodible soils, the frequency of training activities reduces the maintenance and recovery times for heavy maneuver areas. This lack of recovery time increases the potential for sediment to impact water resources. Although minimization measures have been implemented in heavy maneuver areas, the current operational tempo increases the need for maintenance of the training areas, water crossings, and sediment basins. Effective maintenance of maneuver areas and the minimization of impacts to water resources would be a long-term issue at Fort Benning. Negligible impacts are anticipated to groundwater, water supply and wastewater.

Alternative 1: Force Reduction (up to 7,100 Soldiers and Army Civilians)

Minor adverse impacts to water resources are anticipated as a result of the implementation of Alternative 1. With force reduction and associated heavy equipment and other vehicles of the ABCT, Fort Benning anticipates a reduction in off-road heavy maneuver training events. This reduction in training intensity and frequency would allow more recovery time and maintenance functions to be performed. In turn, maneuver training areas would be more sustainable, which would decrease the potential for sedimentation. Due to the high erosion potential of Fort Benning soils, there still exists the potential for impacts from sedimentation from training activities, especially off-road heavy maneuver training. Ranges and training areas are monitored to ensure that there are no significant impacts to wetlands.

There would be a minor beneficial impact to groundwater, water supply and wastewater. A reduction in Soldiers, civilians and their Families would lessen the demand for potable water and reduce the amount of wastewater to be processed.

4.1.10 Facilities

4.1.10.1 Affected Environment

The cantonment areas at Fort Benning have been developed into a wide variety of land uses that comprise the elements necessary for a complete urban-style community. As a result of BRAC Transformation actions and the establishment of the MCoE, a combination of redevelopment (e.g., renovation), development, and expansion has occurred within the four cantonment areas: Main post, Kelley Hill, Sand Hill, and Harmony Church. Training assets, in the form of ranges and maneuver areas, are found throughout the installation.

The 400-acre Kelley Hill cantonment area is located 3 miles east of main post. Current land use, which is fairly concentrated, includes unaccompanied personnel housing, community, and maintenance facilities. Kelley Hill is the current command and control center for the 3-3rd ABCT, which is the only ABCT stationed on Fort Benning. Combat/Combat Support Soldiers and civilians are located throughout the installation. Some equipment maintenance facilities are outdated and undersized to accommodate current requirements.

There are various indoor and outdoor recreation opportunities across the installation. These facilities include golf courses, campgrounds, a marina, bowling centers, swimming pools, and gymnasiums. Hunting and fishing are common activities on post. Other community support

services include Martin Army Hospital, Warrior in Transition facility, child development centers, commissary, and post exchange. Other training and community support facilities are addressed in other sections.

4.1.10.2 Environmental Consequences

No Action Alternative

Fort Benning anticipates a minor adverse impact for training facilities across the installation. During 2011, Fort Benning estimated a 26 percent increase in Soldier training loads post-BRAC Transformation actions. Scheduling conflicts have been identified for training in range and maneuver areas based on the current operational tempo. Although training requirements are being met, some adjustments in scheduling and facilities use must be made to accommodate all of the units training at Fort Benning. This also impacts Range Operations available manpower in servicing and maintenance of training facilities and the scheduling of required environmental mitigation and checks on adjacent ranges and training areas. The use of borrowed military manpower is required to augment manning shortfalls in the Range Operations further depleting the assigned and available Cadre/Soldier strengths of assigned tenant units.

There would be no impacts to support facilities such as training classrooms, motorpools, or equipment maintenance facilities. These facilities would continue to be fully utilized to support the training mission. The demand for recreation, medical, and support facilities would not change.

Alternative 1: Force Reduction (up to 7,100 Soldiers and Army Civilians)

Minor beneficial impacts to training facilities are anticipated as a result of the implementation of Alternative 1. A decrease in Soldier strength would reduce potential conflicts in training scheduling and improve availability of training facilities for remaining units. Additionally, a reduction in the frequency of training exercises would be beneficial for maintaining ranges and training areas and thereby improving sustainability of those facilities. A decrease in training operational tempo and related heavy equipment of a ABCT would be beneficial for the maintenance and sustainability of roadways and off-road maneuver areas.

With a decrease of Soldiers and civilians and the potential for units to be relocated to newly vacated facilities, various older buildings on the installation may be programmed for demolition. Demolition of older structures would be a long-term beneficial effect. Many facilities on Fort Benning are energy inefficient and outdated, and do not efficiently support current training mission and equipment (e.g., some maintenance facilities are undersized for current heavy and tracked vehicles.) The demolition of older facilities would result in a reduction of maintenance costs, and a reduction in the number of buildings containing asbestos and LBP.

Currently, there is a high demand for recreation, medical, and support facilities. It is anticipated that the demand for these services would be reduced to a more sustainable level as a result of this alternative.

4.1.11 Socioeconomics

4.1.11.1 Affected Environment

Fort Benning is located in the Columbus Georgia-Alabama (GA-AL) Metropolitan Statistical Area (MSA), which includes Muscogee, Chattahoochee, Harris, and Marion counties in Georgia, and Russell County in Alabama. The ROI evaluated in this socioeconomic analysis consists of the Columbus GA-AL MSA; and for the purposes of this analysis Talbot County, Georgia, and Lee County, Alabama was added. The geographic extent of the ROI for this analysis includes the residential distribution of the installation's military, civilian, and contractor personnel, and their

Families; and the locations of businesses that provide goods and services to the installation and its population. This ROI constitutes the vast majority of potential socioeconomic impacts from force restructuring proposed for Fort Benning. Data for the Columbus GA-AL MSA is included in the discussion as this data includes the most recent economic conditions for a vast majority of the ROI.

Population and Demographics. This section provides information regarding the installation and ROI population. Total installation daily population (including Active Army, civilians, PCS students and trainees) is approximately 39,250 people (HQDA, 2012), though this does not include military dependents. Fort Benning Soldiers and employee households include another estimated 40,200 Family members (spouses and dependent children). The total population of Fort Benning full-time Soldiers, civilians, trainees, and dependents is estimated to be approximately 79,450 people. This does not include the military retiree population within the ROI, which is estimated to be 10,900 (USACE, 2011). The military retiree population is not anticipated to be directly affected by the Proposed Action or alternatives.

Of the total military employee population (Soldiers, students, trainees, Army civilian employees) of approximately 39,250 people, approximately 14,100 of these are full-time uniformed Soldiers or PCS students and approximately 4,250 are full-time Army civilian employees. The total working population of daily full-time Army Soldiers and government civilian employees is 18,344. Fort Benning's population of students and trainees fluctuates, but currently averages approximately 20,900 students.

Approximately 12,700 Soldiers and their dependents live on Fort Benning. The rest of the military personnel that work or train at Fort Benning and their dependents, an estimated 66,700, live off-post in the surrounding communities within the ROI.

The ROI population is 310,000, which does not include the residents of Fort Benning. As Fort Benning is federal property, its permanent party residents were not included in the 2010 ROI census data as Muscogee or Chattahoochee county residents, though they technically reside within the geographic confines of those counties. Compared to 2000, the 2010 population in Harris and Marion counties increased by more than 20 percent, while the off-post population of Chattahoochee County decreased by more than 20 percent, mainly attributable to the continuing trend of relocation of individuals within the county to areas that are closer to the Atlanta metropolitan area. Table 4.1-2 presents the 2010 census population information for each county and the percent of population change since 2000. The racial and ethnic composition of the ROI is presented in Table 4.1-3 (U.S. Census Bureau, 2010; http://quickfacts.census.gov).

Table 4.1-2. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Georgia	9,687,653	+18.3
Alabama	4,779,736	+7.5
Muscogee, Georgia	189,885	+ 1.9
Chattahoochee, Georgia	11,267	- 24.3
Harris, Georgia	32,024	+35.2
Marion, Georgia	8,742	+22.4
Talbot, Georgia	6,865	- 5.6
Lee, Alabama	6,058	+15.3
Russell, Al	52,947	+ 6.6

Table 4.1-3. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Georgia	56	30	<1	9	3	2	<1
Alabama	67	26	1	4	1	1	<1
Muscogee	44	45	<1	6	2	2	< 1
Chattahoochee	63	18	1	12	2	3	1
Harris	78	17	0	3	1	1	0
Marion	58	32	0	7	1	1	0
Talbot	38	59	0	1	0	1	0
Lee	70	23	0	3	3	1	0
Russell	52	41	< 1	4	<1	2	< 1

Employment, Income, and Housing. Overall, the largest employment sectors in the ROI include education, health and social services, manufacturing, and retail trade. Although substantial acreage in the ROI is devoted to forestry and agriculture, a very small percentage of the civilian population is employed in those sectors. Private non-farm employment in the ROI (including the on-post working population of Fort Benning) is 151,441. Compared to 2000, the 2009 employment (private nonfarm) increased in Talbot and Lee counties, and decreased in Muscogee, Chattahoochee, Harris, Marion, and Russell counties, and the states of Alabama and Georgia (Table 4.1-4). Fort Benning employs an estimated 18.4 percent of the personnel in the Columbus MSA when considering (non-farm) employment except the post's training population. This number is even higher (24.6 percent) if one adds the post's training population to the total employment numbers. When considering the indirect economic impacts of goods and service jobs created by the increased regional demand attributable to Fort Benning employees, not including students and trainees, economic impacts of the installation account for more than 20 percent of the full-time non-farm jobs in the ROI. If one includes students and trainees, by the installation is estimated to support more than 25 percent of all jobs within the ROI.

The average unemployment rate as of March 2012 for the Nation was 8.2 percent, compared to 9.0 percent for the State of Georgia, and 7.3 percent for the State of Alabama. As of March 2012, the Columbus MSA unemployment rate was slightly higher than the national average at 8.6 percent. Chattahoochee County has the highest unemployment rate (approximately 15 percent) in the ROI, while Harris County had the lowest (approximately 7 percent).

Housing is not available for all active service members on Fort Benning. Off-post housing is available in the forms of town homes, apartments, and single family homes in the surrounding counties. With the downturn in the economy, several counties within the ROI have occupancy rates below 90 percent for rental units (U.S. Census Bureau, 2010). As of May, 2012, 12,681 Soldiers, Army civilians, and dependents resided on Fort Benning, with the remainder of personnel and dependents residing in off-post housing.

Employment, median home value and household income, and poverty levels are presented in Table 4.1-4.

Table 4.1-4. Housing and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
Georgia	3,410,505	- 2.1	160,100	47,469	16.60
Alabama	1,612,258	- 2.5	111,900	40,547	17.50
Muscogee	78,925	- 8.7	126,100	39,060	17.50
Chattahoochee	644	- 52.2	78,200	40,725	26.50
Harris	3,324	- 22.6	190,500	63,351	8.80
Marion	1,260	- 42.0	75,900	31,581	22.00
Talbot	547	+ 16.1	85,900	33,873	23.50
Lee	37,367	+ 15.8	139,500	40,894	19.20
Russell	11,030	- 1.2	91,300	33,537	19.90

Fort Benning serves as a major driver of economic activity regionally, and contributes more than $2 billion annually to the local economy through salaries, construction and service contracts, and direct purchase of goods from the local economy. Local planning authorities estimate that in 2012, direct payroll to Fort Benning's military personnel could exceed $1.3 billion annually, while the civilian and contractor payroll may exceed $500 million per year (USACE, 2011).

Environmental Justice. E.O. 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs federal agencies to identify and address as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. Minority and low-income populations within the ROI are presented in Table 4.1-2 and 4.1-3. Compared to the state-wide populations of Alabama and Georgia, Muscogee, Talbot, and Russell counties have higher populations of minorities, particularly African Americans, that exceed 40 percent of the counties' total population. Low income populations are more heavily represented in Chattahoochee, Marion, and Talbot counties where the population below the poverty level exceeded 20 percent of the total county population in 2009. Tables 4.1-2 and 4.1-3 provide additional information. Chattahoochee County includes the highest percentage of individuals in the ROI (26.5 percent in 2009) that live at or below the poverty line, though it should be noted that this does not include Fort Benning's on-post military population.

Schools. Fort Benning has seven on-post DoD schools, six elementary and one middle school, and 29,963 students (Fort Benning Staff, May 2012). High school students residing on the installation (grades 9-12) attend local county high schools (The Valley Partnership Join Development Authority, 2009a). Off post, there are a total of 57 elementary schools, 23 middle schools, 18 high schools, and 1 central elementary/high school within the ROI. Enrollment capacity varies by county across the ROI. Currently, only Mount Olive Elementary in Russell County and elementary schools in Phenix City are near or at enrollment capacity; however, if plans to build additional elementary schools proceed, sufficient capacity for growth is anticipated. All remaining schools in the ROI have some capacity for growth, to varying degrees. Certain school districts may approach capacity within the next 3 years. Both Muscogee and Chattahoochee County school districts are projected to exceed capacity by 2013 if no new schools are constructed. Harris and Marion County School districts are projected to have sufficient space for additional students as a result of new facilities opening in 2011. Stewart and Talbot County School districts are projected to have sufficient capacity due to lack of growth. Russell County middle and high schools also have sufficient capacity for additional students.

Webster County High School has excess capacity, while the elementary/middle school is categorized as just below capacity (USACE, 2011).

Public Safety and Social Services. The Provost Marshal provides on-post law enforcement services. Off post, there are approximately 1,000 law enforcement officers in the ROI (USACE, 2011). Fort Benning's Fire Department provides on-post fire protection. In addition, it has Memoranda of Understanding to provide fire assistance in times of increased need with fire departments in Phenix City, the City of Columbus, and Chattahoochee County. No Memoranda of Understanding exists between Fort Benning and the fire departments in Lee, Marion, Harris, or Talbot counties. Muscogee County and Phenix City Fire departments have 342 and 58 paid fire-fighters, respectively (USACE, 2011). Russell, Chattahoochee, Harris, Marion, and Talbot counties are serviced solely by volunteer fire departments that can experience resource and staffing deficiencies in less populated areas. Lee County is serviced by a combination of volunteer fire departments and municipal fire departments.

The U.S. Army Medical Department Activity provides medical care to an eligible patient population in excess of 72,000 beneficiaries (U.S. Army Medical Department, 2010), though many of these potential beneficiaries receive medical treatment through private sources using different military health care options under TRICARE. Medical services are highly concentrated within the Columbus MSA and are notably deficient in rural areas.

4.1.11.2 Environmental Consequences

No Action Alternative

There would be no change to socioeconomic conditions anticipated under the No Action Alternative. Fort Benning would continue to have the same levels of economic and social impacts on employment, housing, schools, and public services. No additional impacts would be anticipated beyond those beneficial and adverse socioeconomic impacts currently being experienced within the ROI.

Alternative 1: Force Reduction (up to 7,100[1] Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of up to 7,100 military employees (Soldier and Army civilian employees), each with an average annual income of $41,830. In addition, this alternative would affect an estimated 3,950 spouses and 6,791 dependent children, for a total estimated potential impact to 10,741 dependents. The total population of military employees and their dependents directly affected by Alternative 1 would be projected to be 17,815.

Based on the EIFS analysis, there would be significant socioeconomic impacts for population loss within the ROI for this alternative. There would be no significant impacts for sales volume, income, or employment, though these values would all experience declines within the ROI. The range of values that would represent a significant economic impact in accordance with the EIFS model are presented in Table 4.1-5, along with the predicted percentages for Alternative 1. Table 4.1-6 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

[1] Calculations used a number of 7,074 Soldiers and civilians for estimating socioeconomic impacts. This number was derived by assuming the loss of Fort Benning's ABCT, as well as 30 percent of the installation's non-BCT Soldiers and up to 15 percent of the civilian workforce. As discussed in Chapter 3, this number is rounded to the nearest hundred personnel when discussing impacts of Alternative 1.

Table 4.1-5. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	10.55	10.01	5.03	2.58
Economic Contraction Significance Value	- 7.34	- 6.01	- 8.29	- 1.56
Forecast Value	- 3.16	- 4.99	- 5.94	- 5.74

Table 4.1-6. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- $403,706,700	- $342,170,900	- 7,763 (Direct) - 1,234 (Indirect) - 8,997 (Total)	- 17,815
Percent	- 3.16 (Annual Sales)	- 4.99	- 5.94	- 5.74

The total annual loss in volume of direct and secondary sales in the ROI represents an estimated -3.16 percent reduction. State tax revenues would decrease by approximately $16.15 million as a result of the decreased sales. Some counties within the ROI supplement the state sales tax of 4 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by an estimated 4.99 percent. While approximately 7,100 direct Soldier and Army civilian positions would be lost within the ROI, EIFS estimates another 689 military contract service jobs would be lost as a direct result of the implementation of Alternative 1, and an additional 1,234 job losses would indirectly occur from a reduction in demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 8,997 non-farm jobs, or a -5.94 percent change in regional non-farm employment. The total number of employed non-farm positions in the ROI is estimated to be 151,441. A significant population reduction of -5.74 percent within the ROI is anticipated as a result of this alternative. Of the approximately 310,000 people (including those residing on Fort Benning) that live within the ROI, 17,815 military employees and their dependents would be projected to no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This would lead to a reduction in median home values. It should be noted that this estimate of population reduction includes Army civilian and military members and their dependents. This number may overstate potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI. Table 4.1-7 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.1-7. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- $319,986,654 (Local) - $521,369,224 (State)	- $358,886,991	- 7,981 (Direct) - 1,008 (Indirect) - 8,989 (Total)
Percent	- 2.51 (Total Regional)	- 5.23	- 5.93

The total annual loss in direct and indirect sales in the region represents an estimated -2.51 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 0.65 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, state tax revenues would decrease by approximately $20.86 million as a result of the loss in revenue from sales reductions, which would be $4.71 million more in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by 5.23 percent, slightly more than the 4.99 percent reduction projected by EIFS. While approximately 7,100 direct Soldier and Army civilian employee positions would be lost within the ROI, RECONS estimates another 907 direct contract and service jobs would be lost, and an additional 1,008 job losses would occur indirectly from a reduction in demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 8,989 jobs, or a -5.93 percent change in regional non-farm employment, which would be 0.01 percentage points less than projected by the EIFS model.

According to the EIFS, significant negative impacts to economics from loss of populations are anticipated. When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 1 would lead to a significant negative economic impact to the ROI.

Environmental Justice and Protection of Children Impacts. Force reduction would not disproportionately impact the ROI, although some population segments may be impacted more than other segments in terms of overall economic impacts. There would be some disproportionate impacts projected for minority populations, when the Proposed Action is examined at different scales. Within each affected county, the economic impacts of the action would affect all racial and ethnic groups equally. Some of the counties in the ROI, such as Muscogee, Talbot, and Russell counties have a higher proportion of minorities than the State of Georgia as a whole; however, none of the actions taken by the Army would be anticipated to have greater proportionate impacts on minority populations. The ROI has a higher minority population percentage than the state as a whole. Therefore, the impacts on the minority residents of the ROI may be disproportionately adverse at this level; however, the impacts are not expected to be substantially adverse. Low income populations may be disproportionately impacted across the ROI due to the greater proportion of low income individuals when compared to the State of Georgia as a whole.

Impacts from force reduction could impact children and children's schools depending on the distribution of students and how losses would impact local schools. Standard safety measures and applicable requirements would be implemented during demolition and remodeling activities to ensure the safety of children and prevent exposure to hazardous or toxic substances.

School Impacts. It is anticipated that there would be moderate adverse effects to school systems. Schools on-post and off-post would experience losses in enrollment. Currently none

of the counties within the ROI are over capacity, although Russell and Harris County public schools are close to their capacity (USACE, 2011). The reduction of Soldiers on Fort Benning would result in a loss of Federal Impact Aid dollars in the ROI; however, actual projected dollar amounts cannot be determined at this time due to the variability of appropriated dollars from year to year, and the actual number of school-age children for military and civilian Families. Schools receiving Federal Impact Aid dollars would be negatively impacted through monies that would no longer be received to supplement costs of schooling military children. The amount of aid a school receives is based on the number of federal students the district supports in relation to the total district student population. Total Federal Impact Aid varies each year depending on congressional appropriations, but in general has ranged from $250 to $2,000 per student (USACE, 2007).

Alternative 1 may have positive impacts in some of the school systems, particularly in Russell, Muscogee, and Chattahoochee counties where student enrollment is closer to the total schools capacity. Within these counties, implementation of Alternative 1 could lead to a reduction in class sizes and a reduction in student to teacher ratios. Alternative 1 would also reduce student enrollment at Fort Benning's on-post elementary and middle schools. In terms of special needs military children receiving support from the State of Georgia, Federal Impact Aid does not cover the full cost of these students. Alternative 1 would reduce the state economic burden for costs not covered by Federal Impact Aid for these students.

Safety and Public and Social Services Impacts. There would be no anticipated impacts to public safety resulting from implementation of Alternative 1, as all applicable regulations and Memoranda of Understanding would continue to be implemented.

4.1.12 Energy Demand and Generation

4.1.12.1 Affected Environment

Fort Benning's energy needs are currently met by a combination of electric power and natural gas. As a result of utility privatization, the electric system is owned and operated by Flint Electric, and the natural gas system is owned and operated by Atmos Energy. The Energy Policy Act of 2005 (EPACT) states that each federal facility has to reduce energy consumption by 2 percent each year. Fort Benning is committed to comply with the EPACT.

Electricity. Most electric power is supplied to Fort Benning from substations that supply power to cantonment areas, Family housing, and other developed areas of the installation. Low-capacity electrical service is supplied to ranges and training areas in more remote sections of the installation.

Natural Gas. Natural gas supplies the majority of non-mobile fuel requirements at the installation. Propane is the main energy source for the training areas, and is used as backup to the natural gas supply. A peak shaving plant augments natural gas supply during high demands. Distribution lines serve the cantonment areas and Family housing.

4.1.12.2 Environmental Consequences

No Action Alternative

Minor adverse impacts are anticipated on energy demand. The continued use of out-dated, energy inefficient facilities could hinder Fort Benning's requirement to reduce energy consumption. Some older facilities may require renovations to improve energy efficiency to achieve EPACT requirements.

Alternative 1: Force Reduction (up to 7,100 Soldiers and Army Civilians)

Minor beneficial impacts on energy demand are anticipated as the installation would be better positioned to meet EPACT goals. Fort Benning anticipates an overall reduction in energy consumption with the loss of a ABCT and the realignment of tenant units to occupy recently constructed, energy-efficient facilities. Fort Benning anticipates that older, energy inefficient facilities would be demolished. Some utility infrastructure may be demolished or no longer utilized in association with building demolition.

4.1.13 Land Use Conflicts and Compatibility

4.1.13.1 Affected Environment

Fort Benning covers approximately 182,000 acres in portions of Muscogee, Chattahoochee, and Russell counties. Fort Benning training lands consist of drop zones, landing zones, dudded and non-dudded impact areas, ranges, and maneuver areas. Maneuver areas are throughout the installation, and landing and drop zones are scattered throughout.

Land use conflicts and compatibility issues result from encroachment by the surrounding communities. Land uses immediately adjacent to the installation consist of residential, agricultural and timber, industrial, and open space. Residential encroachment adjacent to the installation causes concern due to potential incompatibility. Communities near Fort Benning are required by the State of Georgia to coordinate with Fort Benning on any proposed zoning decisions for land that is within 3,000 feet of the installation (Georgia Code 36-66-6). The decision-making process enables zoning changes to be compatible with nearby military land use.

Fort Benning produces various impacts that can affect the quality of life in surrounding communities. Examples of these impacts include smoke from prescribed burns, the risk of an aircraft accident, and noise from small and large arms firing. To assist the communities in the land use zoning decisions, the Joint Land Use Study (JLUS) describes the land use and NZs that the Army uses to estimate the impacts from encroachment (The Valley Partnership, 2008). Through JLUS, the installation closely works with the community to develop cooperative approaches for reducing adverse impacts of conflicting land uses.

The Army also addresses encroachment issues and promotes natural resource conservation through the Army Compatible Use Buffer (ACUB) program. An implementation strategy of the ACUB program is to acquire conservation easements or other land interests that prohibit incompatible development in perpetuity. While the ACUB program prohibits urban development, it accommodates compatible uses such as farming and forestry that do not pose a risk of encroachment to installation training activities. The ACUB program also expands conservation of natural resources, and management of threatened and endangered species to properties outside of Fort Benning.

Lands that are not used for training at Fort Benning are used to support cantonment functions. Approximately 8,850 acres, main post is the largest and most developed of the cantonment areas. It includes the MCoE and Garrison Headquarters, Infantry and Armor Schools, Cuartels barracks complex, Martin Army Community Hospital, Post Exchange, Commissary, and various Family housing areas. Lawson Army Airfield is located in the southernmost portion of main post. The areas of main post adjacent to the Chattahoochee River and Upatoi Creek are largely green space. Family housing and outdoor recreation dominate the northern portion of main post. The densely developed core of main post includes unaccompanied personnel housing, community facilities, training facilities, supply and storage, maintenance, industrial, and medical land uses.

There are three additional distinct cantonment areas on Fort Benning as discussed below:

- ***Harmony Church.*** The Harmony Church cantonment area lies 5 miles southeast of main post and south of U.S. Highway 27. Harmony Church has seen the greatest change and growth with the establishment of the MCoE. Harmony Church is now the home of the Armor School, Ranger Training Brigade, the 81st Regional Readiness Command Equipment Concentration Site, 197th Infantry Brigade, and the Continental U.S. Replacement Center. The 775-acre Harmony Church cantonment area supports a diverse assortment of facilities including unaccompanied housing, vehicle maintenance shops, training, motor pools, administration buildings, and outdoor recreation land uses.
- ***Kelley Hill.*** The 400-acre Kelley Hill cantonment area is located 3 miles east of main post. Current land use, which is fairly concentrated, includes unaccompanied personnel housing, community, and maintenance facilities. Kelley Hill is the current command and control center for the 3-3rd ABCT, which is the only ABCT stationed on Fort Benning. The 3-3rd ABCT consists of a Brigade Headquarters and six battalions: two combined arms Battalions, one Reconnaissance Squadron, one Field Artillery Battalion, one Brigade Special Troops Battalion, and one Brigade Support Battalion and is manned with approximately 3,750 Soldiers).
- ***Sand Hill.*** The 2,510-acre Sand Hill cantonment area is located 4 miles northeast of main post. Land use in this cantonment area includes Family housing, unaccompanied personnel housing, training, and community facilities.

4.1.13.2 Environmental Consequences

No Action Alternative

Fort Benning anticipates less than significant (moderate adverse) impacts to land use compatibility. With the current operational tempo of live-fire and night-time training events, the encroachment of communities along Fort Benning's boundary could cause conflicts in land use. This conflict is primarily due to noise generated by training exercises and the proximity of sensitive noise receptors as discussed in Section 4.1.5. Land use conflicts also are caused by prescribed burning which can generate smoke and particulate matter that is not compatible with some adjacent land uses. Prescribed burning is required for training area sustainment and to maintain RCW habitat. Fort Benning's ACUB and JLUS programs attempt to mitigate these potential impacts to the surrounding communities.

Within the installation boundary, cantonment areas and training lands have been planned in a logistical manner to support the training mission and Soldier needs. With the recent actions of BRAC/Transformation and the establishment of the MCoE, current availability of land for new construction and development of training areas is minimal.

Alternative 1: Force Reduction (up to 7,100 Soldiers and Army Civilians)

Minor adverse effects to land use are anticipated with a reduction in Soldier strength. A decrease in Soldier strength would not change land use on post. It is anticipated that the frequency of large arms firing event and night-time training exercises would decrease; however, current noise contours would not be expected to change. Fort Benning would continue the JLUS and ACUB programs to minimize potential land use conflicts between training on post and the surrounding community.

4.1.14 Hazardous Materials and Hazardous Waste

4.1.14.1 Affected Environment

At Fort Benning, hazardous materials and hazardous waste are subject to applicable RCRA regulations. This includes the use, storage, transport, and disposal of hazardous materials and wastes. Through the combined efforts of several offices at Fort Benning, programs have been established to control the entry of hazardous substances to the installation; to safely manage their handling and transportation within the installation; to inform military and civilian employees of their dangers; to minimize the risk of human exposure and release to the environment associated with these substances; and to dispose of these substances in an environmentally sound manner when they are no longer useful (USACE, 2007).

Routine operations on Fort Benning require the use of a variety of hazardous materials, including petroleum products, solvents, cleaning agents, paints, adhesives, and other products necessary to perform vehicle and equipment maintenance, military training activities, installation upkeep, and administrative and housing functions. Toxic substances commonly occurring on Army installations include asbestos, LBP, PCBs, and radon. Routine operations across the installation generate a variety of hazardous wastes, including various solvents; paints; antifreeze; aerosols; contaminated filters, rags and absorbents; weapon cleaning patches and sludges; and some items managed as universal wastes, such as used batteries and fluorescent light tubes (USACE, 2007). Fort Benning has numerous underground storage tanks (USTs) and above ground storage tanks across the installation, primarily in the cantonment areas.

Fort Benning has several plans in place to help manage hazardous materials and waste including an installation Spill Contingency Plan; Spill Prevention, Control, and Countermeasures (SPCC) Plan; Stormwater Pollution Prevention Plan (SWPPP); and Hazardous Waste Management Plan (HWMP). Fort Benning has no active municipal solid waste landfills; however, there are several closed landfills on post. There is one inert landfill used for storm generated debris, such as trees and brush.

4.1.14.2 Environmental Consequences

No Action Alternative

Minor adverse impacts would be anticipated are under the No Action Alternative. The MCoE would continue the use and generation of hazardous materials and wastes on Fort Benning (e.g., motor pools and military equipment requiring maintenance) in accordance with all applicable laws, regulations and plans. Types and quantities of hazardous wastes generated have been accommodated by the existing hazardous waste management system. Due to the higher number of Soldiers and support activities as a result of this alternative, the potential for spills is higher than that of Alternative 1.

Alternative 1: Force Reduction (up to 7,100 Soldiers and Army Civilians)

Minor adverse impacts would be anticipated as a result of the implementation of Alternative 1. It is also anticipated that Fort Benning would decrease its storage and use of hazardous materials that are used during training exercises. Hazardous wastes generated would decrease in volume as vehicle and equipment maintenance activities decrease with a decrease in Soldiers and civilians. Due to the reduced numbers of ABCT Soldiers and support activities, the potential for spills would be somewhat reduced during training and maintenance activities. Waste collection, storage, and disposal processes would remain mostly unchanged, although the quantities may be reduced. There may be the potential for a short-term increase in solid and hazardous waste generation resulting from building renovation or demolition of vacated facilities; this may include removal of above ground storage tanks or USTs. Fort Benning would

minimize any negative impacts by following all applicable laws, regulations and Fort Benning plans.

4.1.15 Traffic and Transportation

4.1.15.1 Affected Environment

Fort Benning is located in the western part of Georgia and the eastern part of Alabama. Local communities include Columbus, Georgia and Phenix City, Alabama. Major road routes in the region include Interstate (I) 185, and U.S. Routes 27, 280, and 431, and Georgia State Routes 1 and 26.

4.1.15.2 Environmental Consequences

No Action Alternative

Minor adverse impacts are anticipated under the No Action Alternative. Traffic studies prepared for analysis in Fort Benning's BRAC and MCoE EIS identified LOS deficiencies within the installation. Mitigation measures to widen roads, improve intersections, and encourage use of travel demand management tools were implemented to minimize significant impacts to traffic and transportation both on and off post. Even with these mitigation measures, the number of personal and work vehicles associated with Fort Benning would continue to cause some traffic congestion.

Alternative 1: Force Reduction (up to 7,100 Soldiers and Army Civilians)

Minor beneficial impacts are anticipated on traffic and transportation systems. With the departure of Soldiers, civilians, and their Family members, Fort Benning anticipates a decrease in traffic congestion and improvements in LOS on the installation and neighboring communities. The population decrease may have a minor reduction of risk to the safety of motorist, pedestrians and bicyclists.

4.1.16 Cumulative Effects

The ROI for the cumulative analysis consists of the Columbus GA-AL MSA; Talbot, Stewart and Webster counties, Georgia, and Lee County, Alabama. The geographic extent of the ROI includes all counties surrounding or nearby Fort Benning that may be impacted by regional projects listed below. Cumulative effects include Army-related activities at Fort Benning and community activities in the ROI. The effects of past and present actions were included in the discussion of the affected environment and their impacts were taken into account under the direct impacts discussion.

Reasonably Foreseeable Future Projects on Fort Benning

- Training Land Expansion Program to acquire up to 82,800 acres of additional training lands near Fort Benning (approximately FY 2012 to 2017);
- Relocation of the ARC field training off the current Fort Benning footprint (planned completion by FY 2016);
- Construction of a ground-source community loop heat transfer utility system on Sand Hill (proposed for FY 2013);
- Construction of a new Army Lodge on main post (proposed to begin in FY 2012), and implementation of the Army's Privatization of Army Lodging (PAL) at Fort Benning (proposed for no earlier than FY 2014); and
- Implementation of maneuver training improvements (low-water crossings, stream bank hardening, and other projects) within the GHMTA.

Reasonably Foreseeable Future Projects outside of Fort Benning

- Columbus and Phenix City Riverwalk Expansion;
- Benning Technology Park, located adjacent to I-185 and Victory Drive, to provide office space and research and development centers for information technology and defense contractors;
- 14th Amendment Highway Corridor which is a Department of Transportation Study of a proposed highway to extend from Augusta, Georgia to Natchez, Mississippi, servicing intermediate cities of Macon and Columbus, Georgia, and Montgomery, Alabama. General urban growth; which includes several small housing and strip mall development projects, and rehabilitating existing structures to support expanding surrounding communities; and
- Various road improvement projects as identified in the Transportation Improvement Program for Columbus and Phenix City.

Potential incremental effects from the proposed force realignment and reduction at Fort Benning are anticipated to have a significant cumulative, adverse effect to regional economics, and negligible effects to other socioeconomic factors (including environmental justice and protection of children). The community has planned for growth associated with moving the Armor School to Fort Benning and establishing the MCoE. The adjustment to a substantial loss of personnel likely would involve the re-evaluation of proposed projects. The renovation and demolition of Fort Benning facilities that would no longer be utilized would have only a very minor and temporary beneficial impact on regional economics. No current or future projects for growth have been identified that would off-set the long-term, adverse effects from the partial loss of direct and indirect economic activity that Fort Benning currently provides the entire region.

Fort Benning would also re-evaluate the need for land acquisition as proposed in the TLEP. With the loss of an ABCT, the competition for training facilities such as heavy maneuver land would be reduced from current demand. The re-evaluation may indicate that either a smaller TLEP land acquisition of approximately 25,000 acres would be needed, or may result in no land acquisition being pursued under TLEP for the foreseeable future. The TLEP DEIS indicated that there may be a positive regional economic impact from the larger land acquisition due to land purchase and relocation activities over several years. Some comments received on the TLEP DEIS, however, indicate community concerns about significant economic losses for the counties involved. With the information available to date, the Army cannot determine the potential economic impacts related to a reduced or no TLEP land acquisition.

The potential cumulative effects on the natural environment resources would be reduced to minor adverse or beneficial as a result of the implementation of Alternative 1. Fort Benning would coordinate with USFWS to determine how the changed impacts to threatened and endangered species, especially the RCW, may result in changes in training and management actions. Fort Benning would re-evaluate the need to relocate the ARC training off post and would coordinate with USFWS on options.

If the communities in the Fort Benning region scaled back, fewer environmental impacts may be anticipated. Demolition or renovation of facilities on post and in the community are not anticipated to cause any negative cumulative impacts and instead may result in more energy efficiencies for regional beneficial cumulative impacts.

Overall, the potential cumulative impacts of Alternative 1 at Fort Benning is anticipated to be significant adverse for economics, and generally reduced impacts, ranging from minor adverse to beneficial, for natural and cultural resources.

4.2 FORT BLISS, TEXAS

4.2.1 Introduction

Fort Bliss was the home of the Air Defense Artillery Center of Excellence and was responsible for air defense artillery training of U.S. Soldiers and various allied nation Soldiers until the BRAC 2005 Commission recommended the Center's relocation to Fort Sill, Oklahoma. BRAC 2005 legislation directed the realignment of the 1st Armored Division to Fort Bliss. Fort Bliss has approximately 1.1 million acres of land. While most of the installation's training areas and ranges (over 80 percent) are located in New Mexico, the cantonment area is located in Texas immediately adjacent to the City of El Paso. El Paso residential and commercial development surrounds the southern portion of the installation. Las Cruces, New Mexico is approximately 30 miles northwest of El Paso and is located to the west of Fort Bliss Doña Ana gunnery ranges. Las Cruces is separated from Fort Bliss by the Organ Mountains. The Organ Mountains, on the west side of Doña Ana Ranges provide a natural noise barrier effectively containing noise in that part of the range. Other small towns and municipalities adjacent to the installation's borders include Chaparral, New Mexico, south of Doña Ana, and Alamogordo, New Mexico, to the north.

1st Armor Division and mobilization training activities are conducted on over 30 live-fire ranges throughout the installation. Fort Bliss has three major range complexes: Doña Ana, Orogrande, and Meyer. The latter two are located in the McGregor Range area. Assigned units include ABCT, Light IBCT, a SBCT, and Aviation, Fires, and SUSBDEs. Large caliber weapons systems include M1 tanks, Bradley Fighting Vehicles, 155mm Self-Propelled Howitzers (tracked), 120mm mortar carriers, Strykers, Apache helicopters, and air defense systems. The live-fire ranges support training with grenades, mortars, artillery, tank fire, anti-tank rockets, guided missiles, and high explosive demolitions. These activities occur primarily at either the Doña Ana Range Complex or at Orogrande Range Complex; however, demolitions occur at the Meyer Range Small Arms Complex (SAC). The Fort Bliss Training Complex offers a variety of terrain and environments for off-road vehicle maneuver, and supports force-on-force maneuvers and live-fire training (Figure 4.2-1).

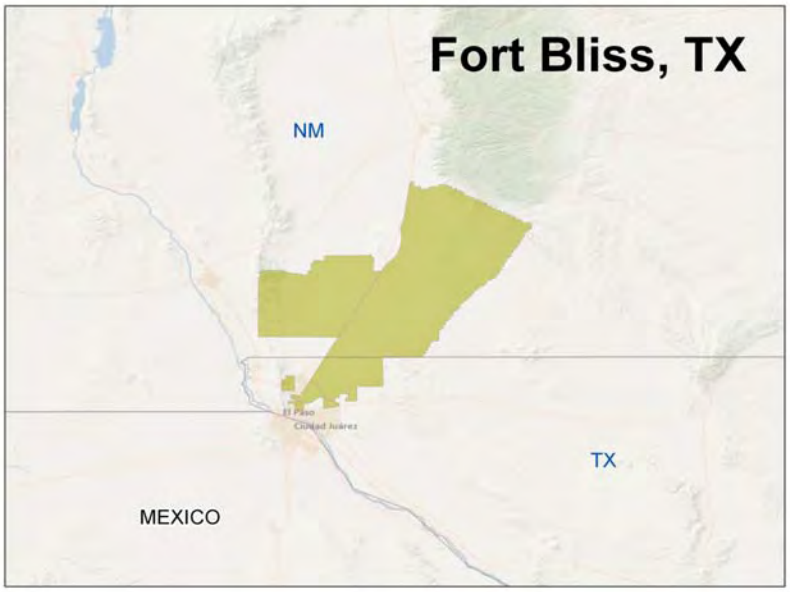

Figure 4.2-1. Fort Bliss

4.2.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Bliss does not anticipate any significant adverse impacts as a result of the implementation of Alternative 1 (Force reduction of up to 8,000 Soldiers and Army Civilians) or Alternative 2 (Installation gain of up to 3,000 Soldiers) with one exception. While significant impacts from Alternative 1 are not anticipated with regard to employment, income, or sales volume in the ROI, a significant impact to the population is anticipated as a result of the implementation of Alternative 1. Table 4.2-1 summarizes the anticipated impacts to VECs for each alternative.

Table 4.2-1. Fort Bliss Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 8,000	Alternative 2: Growth of up to 3,000
Air Quality	Minor	Beneficial	Minor
Airspace	Minor	Minor	Minor
Cultural Resources	Negligible	Minor	Less than Significant
Noise	Negligible	Beneficial	Minor
Soil Erosion	Minor	Beneficial	Minor
Biological Resources	Negligible	Beneficial	Minor
Wetlands	Negligible	Negligible	Negligible
Water Resources	Minor	Beneficial	Less than Significant
Facilities	Negligible	Negligible	Negligible
Socioeconomics	Negligible	Significant	Beneficial
Energy Demand and Generation	Negligible	Beneficial	Minor
Land Use Conflict and Compatibility	Minor	Minor	Minor
Hazardous Materials and Hazardous Waste	Minor	Minor	Minor
Traffic and Transportation	Significant but Mitigable	Beneficial	Significant but Mitigable

4.2.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section below, no more than a beneficial or negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- ***Wetlands.*** Fort Bliss contains approximately 1,170 miles of drainage. The majority of these drainages are found in the northeast, central, and southeast portions of the

McGregor Range. The vast majority of arroyo-riparian drainages on Fort Bliss do not qualify as jurisdictional wetlands by the USACE (USACE, 2007).

Minimal (very low) impact is anticipated to wetlands as a result of the implementation of each alternative. Because of the lack of jurisdictional wetlands and in place restrictions to training activities in riparian areas, additional or reduced training activities associated with all of the alternatives would have little to no impact on wetlands. Activities associated with the increase in Soldiers and their Families within the cantonment area would also have no impact to wetlands.

- ***Facilities.*** The main cantonment area is the urbanized portion of Fort Bliss, and has been developed into a wide variety of land uses that comprise the elements necessary for a complete community. This includes the installation Post Exchange, commissary, housing and Family support services, medical, and mission-support facilities. Infrastructure within the Fort Bliss Training Complex is composed of ground transportation, utilities, energy, and communication systems that are located in the installations base camps and training areas.

  The impacts of the Proposed Action on utilities, energy, and communications are primarily related to projected increases in population on and off post. These were analyzed by estimating per unit consumption on generation rates using the most recently available data, and then estimating how total consumption or generation rates would change with the changed population. The increased consumption and generation were then compared with the ability of existing infrastructure to handle those changes.

  Negligible impacts are anticipated for all alternatives. Fort Bliss could presumably benefit from the ability to demolish outdated, inefficient facilities as a result of the implementation of Alternative 1, and has the buildable space and facilities capacity to accommodate growth as a result of Alternative 2.

Fort Bliss anticipates that the implementation of any of the alternatives would result in negligible impacts for those VECs discussed above. The following provides a discussion of the VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Proposed Action alternatives.

4.2.2 Air Quality

4.2.2.1 Affected Environment

At Fort Bliss, the ROI for air quality includes Doña Ana and Otero counties in New Mexico and El Paso County in Texas. El Paso County, including Fort Bliss, is classified as being in attainment for all criteria pollutants. The exception to this is the City of El Paso which has been designated as "moderate" nonattainment for carbon monoxide (CO) and particulate matter smaller than 10 micrometers (PM_{10}). Otero and Doña Ana counties are designated as being in attainment for all criteria pollutants though Doña Ana County has had sporadic violations of the PM_{10} standard. These routinely occur in the western part of the county and are usually the result of high winds lifting dust into the air (i.e., dust storms). Fort Bliss is a party to the Natural Events Action Plan that addresses violations of the PM_{10} caused by natural events by exempting the PM_{10} exceedances during wind storms or other "naturally occurring" events.

Since Fort Bliss is located in attainment areas in both Texas and New Mexico, there is no requirement to conduct a conformity analysis. The closest "PSD Class I Area" is 45 miles to the southeast and is not anticipated to be affected by the installations activities so the facility has no requirements under this provision. Texas issued a federal operating permit to Fort Bliss in January 2007. Emissions of nitrogen oxides (NO_x) and CO are the key pollutant triggering the

installation as a major source. Fort Bliss is not considered a major source on the New Mexico side of the installation so there is no requirement for an air quality permit.

4.2.2.2 Environmental Consequences

No Action Alternative

Although there would continue to be minor short- and long-term fugitive dust impacts from training, these impacts would not exceed threshold levels. Permit conditions would continue to be monitored and met, but no changes to emission sources are anticipated, other than those mandated by maintenance, replacement, or elimination of sources as they age or are removed from service.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

There would be an anticipated beneficial impact to regional air quality from reduced stationary and mobile emission sources. There would be less combustion and generation of NAAQS pollutants and Hazardous Air Pollutants (HAPs) associated with military training. In addition, there would be less fugitive dust generated from fewer training events. It is assumed that the increases in air emissions are directly proportional to the increase in population at Fort Bliss. In general, combustion and fugitive dust emissions would produce localized, short-term elevated air pollutant concentrations that would not result in any sustained impacts on regional air quality and these impacts would be reduced if Fort Bliss were to reduce its Soldier population by up to 8,000 Soldiers.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers and Army Civilians resulting from Brigade Combat Team Restructuring and Unit Realignments

Minor adverse short- and long-term adverse impacts are anticipated on air quality within the installation and surrounding communities due to the influx of approximately 3,000 additional Soldiers. Any construction-related emissions also have the potential to produce localized, short-term elevated air pollutant concentrations; however, these are not anticipated to have a major impact on regional air quality. Mobile source combustion emissions resulting from training would be widely distributed both spatially and temporally. Fugitive dust emissions remain a localized issue and measures would be taken to limit fugitive dust emissions occurring at or near the perimeter of the installation that could potentially affect the off-post community. It is anticipated that there would be increased emissions from additional equipment required to support new units (i.e., fuel storage and dispensing, boiler, and possible electric peak-shaving generators). Additionally, it is anticipated that more training and operations would occur off of established roads and tank trails. Given the wide distribution of emissions across the installation training areas, it is not anticipated that regional air quality would be result in significant impacts, or impacts that would significantly differ from the current No Action Alternative.

4.2.3 Airspace

4.2.3.1 Affected Environment

Fort Bliss also has the largest contiguous tract of virtually unrestricted airspace in the Continental U.S. at 1,500 square miles. Airspace in the region is shared by Fort Bliss, White Sands Missile Range, and Holloman Air Force Base. Biggs Army Airfield at Fort Bliss supports the 1st AD CAB. Fort Bliss is responsible for the air mission of Active and Reserve Components for training at the installation, supporting fixed- and rotary-winged operations. Fort Bliss also supports the major mobilization and deployment mission at Fort Bliss. The runway is 13,554 feet long by 150 feet wide and is capable of handling traffic from C-5 Galaxies and B-52s. There is also 1,000 feet of asphalt overrun at the north end, and more than 7 miles of taxiways.

Aviation activities occur at Biggs Army Airfield and military training activities on McGregor Range and Doña Ana Range–North Training Areas. Biggs Army Airfield mission activities occur within the airspace terminal area under the control of the FAA-operated El Paso Approach Control facility at El Paso International Airport. The Approach Control Area contains elements of controlled airspace, uncontrolled airspace, Restricted Area SUA, and Military Training Routes that are used for military operations by the Army and other DoD services. There are several public use and private airports surrounding Fort Bliss' MOA. Fort Bliss is currently working with the FAA to adjust its MOAs to support aviation and UAS training.

4.2.3.2 Environmental Consequences

No Action Alternative

Minor impacts would result under the No Action Alternative. The installation would continue to pursue adjustment of its existing airspace to better support aviation and UAS training. This alternative would not produce any additional conflicts with overlying restricted airspace.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Impacts as a result of the implementation of Alternative 1 would be minor. The use of airspace would not change substantially with the loss of ground units as a result of this alternative. Aviation and UAS would continue to require airspace to support training. The implementation of Alternative 1 would not result in a decreased requirement for airspace, but rather result in lower utilization and requirements for activation of existing SUA. Use of existing airspace would continue to be managed through scheduling and balancing training requirements with airspace availability.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be an anticipated minor impact to airspace as a result of the implementation of Alternative 2. The use of airspace would not change significantly and additional airspace would not be required; however, scheduling, activation, and utilization of existing SUA would increase. The increased operations could cause some minor impacts to air traffic flow within the National Airspace System around Fort Bliss. Current use of airspace is not anticipated to change. Use of existing airspace would continue to be managed through scheduling and balancing training requirements with airspace availability.

4.2.4 Cultural Resources

4.2.4.1 Affected Environment

There are two NRHP-eligible historic districts on Fort Bliss. The installation contains 405 historic buildings and 12 historic landscapes. Over 800,000 acres have undergone archaeological survey. There are over 19,000 recorded archaeological sites on Fort Bliss property. The largest curatorial facility in the region is located on Fort Bliss and is capable of housing 35,000 cubic feet of materials. Due to the history and desert environment of the area, there is a higher incidence of readily visible surface finds than in the eastern U.S. Historic buildings, both pre-1956 and Cold War era, have been identified and evaluated for NRHP-eligibility.

4.2.4.2 Environmental Consequences

No Action Alternative

Impacts to cultural resources from the No Action Alternative would be negligible. Activities with the potential to affect cultural resources are monitored and regulated when anticipated through a variety of preventative and minimization measures.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor impacts would be anticipated as a result of the implementation of Alternative 1 at Fort Bliss. Removal of temporary facilities through demolition and the Facility Reduction Program (FRP) would have a very low potential for adverse effects to historic buildings and/or archeological resources. Removal of outdated infrastructure has the potential to affect historic structures, but such actions to demolish older structures would be conducted in accordance with procedures agreed to by Fort Bliss and the State Historic Preservation Officer (SHPO) to ensure compliance with the Section 106 of the NHPA and as required by 36 CFR 800 as required. If less Soldiers allow for some older, inefficient facilities to be demolished, a low potential exists for unique or potentially eligible historic structures to be affected as a result of this action; however, if such an action is proposed, full consultation with the SHPO would occur, as required.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support resulting from Brigade Combat Team Restructuring and Unit Realignments

This level of growth on Fort Bliss is anticipated to have a less than significant impact to cultural resources. Measures are in place to accommodate training to prevent adverse impacts to cultural resources. The types of training conducted by the additional Soldiers would not change, though some training areas on Fort Bliss might be used with more frequency or intensity compared with current baseline conditions. Fort Bliss would continue to follow the procedures it has in place, to ensure regulatory compliance with the NHPA and to protect cultural resources. The increase of range usage would potentially increase the use of bivouac areas that are adjacent to ranges which could lead to an increased loss of some cultural resources through small-scale ground disturbance activities. An increase in training would be anticipated to reduce slightly the installation's capabilities of monitoring archaeological sites for condition and/or violations through competition for range access.

Any increase in training has the potential to further limit access to historic properties. Access to sacred sites under the Sacred Sites Act would not be anticipated to be affected by implementation of Alternative 2. Fort Bliss would continue to work with local Tribes to ensure access to sacred sites. Mechanisms are currently in place to accommodate scheduling and access to all of these cultural resources by the public and have historically been minimally impacted by past training surges and fluctuations.

In general, some historic buildings may be impacted by the additional work space required for the increase in personnel. It is possible that the additional foot and vehicular traffic would adversely impact archaeological sites. Both Combat and Combat Support Soldiers added to Fort Bliss as a result of this alternative would not likely significantly change the risk of exposure of archaeological resources. Soldiers would be engaging qualitatively in the same types of activities the existing BCTs and logistics units currently engage in, just to a slightly greater extent.

4.2.5 Noise

4.2.5.1 Affected Environment

El Paso residential and commercial development surrounds the southern portion of the installation. Las Cruces, New Mexico is approximately 30 miles northwest of El Paso and is located to the west of Fort Bliss Doña Ana gunnery ranges. Las Cruces is separated from Fort Bliss by the Organ Mountains. The Organ Mountains, on the west side of Doña Ana Ranges provide a natural noise barrier effectively containing noise in that part of the range. Other small towns and municipalities adjacent to the installation's borders include Chaparral, New Mexico, south of Doña Ana, and Alamogordo, New Mexico, to the north.

U.S. Highway 54 connects El Paso and Alamogordo and runs through the installation, separating McGregor Range area from the installation's Doña Ana Training Complex. I-10 connects El Paso and Las Cruces. Recent land trends along the I-10 corridor traveling towards Las Cruces have the potential for future residential growth. Given the potential for off-post noise in some areas adjacent to I-10, Fort Bliss is continuing to work with Doña Ana County officials to encourage compatible development in those area, as well as the area adjacent to Chaparral, New Mexico.

1st Armor Division and mobilization training activities are conducted on over 30 live-fire ranges throughout the installation. Fort Bliss has three major range complexes: Doña Ana, Orogrande, and Meyer. The latter two are located in the McGregor Range area. Assigned units include ABCT and IBCT, an SBCT, and Aviation, Fires, and SUSBDEs. Large caliber weapons systems include M1 tanks, Bradley Fighting Vehicles, 155mm Self-Propelled Howitzers (tracked), 120mm mortar carriers, Strykers, Apache helicopters, and air defense systems. The live-fire ranges support training with grenades, mortars, artillery, tank fire, anti-tank rockets, guided missiles, and high explosive demolitions. These activities occur primarily at either the Doña Ana Range Complex or at Orogrande Range Complex; however, demolitions occur at the Meyer Range SAC.

The Army measures noise levels in two ways: day-night average levels (DNL) and peak noise levels. DNL describes the average daily average over a period of 1 year. Peak noise levels measure maximum noise levels from a single event. Since peak noise levels are not cumulative, additional units or Soldiers using ranges would not change the peak noise contours as long as the types of weapons remain the same. On the other hand, DNL measures cumulative noise in three NZs. Per standards established by the U.S. Army Public Health Command (PHC) (formerly the Center for Health Promotion and Preventive Medicine), NZ lll noise should not go off the installation and is incompatible with nearly all off-post land uses. NZ ll is incompatible with off-post uses such as residences, schools, and medical facilities. The LUPZ, in NZ l is an area that reaches NZ ll levels during periods of increased operations.

In February 2007 the PHC analyzed the potential for off-post noise based on the stationing of the 1st Armor Division at Fort Bliss with multiple ABCT and other brigades such as Aviation and Fires (U.S. Army, 2007). That noise analysis was subsequently updated in December, 2008 for Grow the Army EIS. It analyzed additional Soldiers and units to include IBCT and SBCT. Based on those analyses, the NZ lll contour for Fort Bliss does not extend beyond the installation boundary for either small or large caliber live-fire weapons. NZ ll DNL levels are projected to extend beyond the installation boundary in two locations as a result of gunnery and artillery firing on the Doña Ana Range Complex. NZ ll peak levels are also projected to extend off the installation adjacent to Meyer Range in the southeast as a result of the demolition range. The community most affected by off-post noise is Chaparral, New Mexico where the Army purchased an easement on 5,200 acres of New Mexico State Trust land to mitigate future

impacts. The LUPZ also is projected to extend off the installation into northeast El Paso and into El Paso County southeast of the installation.

At Biggs Army Airfield NZ lll is contained entirely within the installation. NZ ll only extends beyond a portion of the installation boundary running north and is essentially a flight track, where aircraft using Biggs Army Airfield are still gaining altitude. The LUPZ and NZ ll at Biggs Army Airfield does extend over portions of the cantonment area and main post, into Family housing areas. Noise from operations at the El Paso International Airport extends onto Fort Bliss and has the potential to affect development to the east of Biggs Army Airfield.

4.2.5.2 Environmental Consequences

No Action Alternative

Negligible impacts from noise are anticipated under the No Action Alternative. The acoustic environment of Fort Bliss would continue to be affected by small- and large-caliber weaponry, artillery, and aircraft overflight. Other activities, such as ground maneuver training and exercises resulting in noise created by personnel and vehicles, would continue to contribute noise on Fort Bliss, to the same levels and intensity as historically experienced.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Impacts from noise are anticipated to be negligible and slightly beneficial. Day/night average noise levels would likely decrease and would remain well within the levels and contours previously projected by the PHC (U.S. Army, 2007). Existing ranges would still be utilized for firing the same types of weapons systems and conducting the same types of training. As a result of the implementation of Alternative 1; however, Fort Bliss would have an anticipated reduction in the frequency of noise generating training events. Fort Bliss' remaining BCTs would continue to conduct maneuver and live-fire training in the field; however, the number of weapons qualifications and maneuver training events could be anticipated to decrease in proportion with the number of Soldiers stationing at the installation. A reduction of 8,000 Soldiers would have no impact on the weaponry being utilized on existing ranges and would not be anticipated to change to current noise contours nor change the risk potential for noise complaints. The current frequency and intensity of aviation training activities, a major contributor of off-post noise at the installation, would not be anticipated to change, as aviation units would not be impacted by these decisions.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Minor long-term adverse impacts are anticipated and are not likely to exceed those previously projected or analyzed by PHC in 2007. There would likely be a minor increase in small arms weapons training which would not generate any new noise contours on the installation, nor is it anticipated to be heard at off-post locations. Small arms firing occurs away from the installation boundary at the Doña Ana and Orogrande Range complexes and does not currently present any significant impacts to off-post residential areas or sensitive noise receptors.

Residential communities located south of Doña Ana Range could experience a slight increase in day/night average noise levels from additional large caliber weapons fire such as tanks and artillery (if included with additional Soldiers). As home station operational tempo increases, residential areas near the installation may experience increased ambient noise levels, but noise contours previously projected would not likely change nor would the Proposed Action result in changes to training or installation land use. If the Proposed Action were implemented at Fort Bliss, site-specific NEPA analysis might be required, depending on whether new ranges and facilities would be needed to support stationing activities and where such facilities would be

located. Given previous noise analyses for BRAC and Grow the Army, the IONMP would not need updating.

4.2.6 Soils

4.2.6.1 Affected Environment

Most of Fort Bliss is located in a large intermontane basin formed by the Tularosa and Hueco basins of southern New Mexico and west Texas. The basins lie between the Franklin and Organ mountains to the west, and the Sacramento and Hueco mountains to the east. Elevation on the basin floor is approximately 3,800 feet above sea level, rising to more than 8,000 feet in the Organ Mountains. The region is part of the Basin and Range Province (Collins and Rainy, 1994) of the western U.S., as well as the northern part of the Chihuahuan Desert (Schmidt, 1979), an interior continental desert which receives most of its rainfall during the hot summer months.

Fort Bliss has developed pedological, geomorphic, and other criteria to create ecological management units (EMU) that encompass regions with similar natural characteristics. The EMU concept helps promote better land stewardship and sustainment practices on Fort Bliss as part of the INRMP (U.S. Army, 2001). Figure 4.2-2 displays the current configuration of EMUs.

The Tularosa and Hueco basins (the Basin Aeolian EMU) comprise most of the land area of Fort Bliss. Wind-deposited (aeolian) coppice dunes anchored by mesquite and other desert shrubs, cover most of the basin floor. The dune soils are mainly Entisols, exhibiting little soil horizon development, and having formed only within the last few hundred years. Soils comprising the coppice dune fields are sands and loamy sands that are highly susceptible to wind erosion due in part to the lack of soil structural development and sparse vegetative cover. Typically underlying the coppice sand dunes is a much older (Pliocene-Pleistocene) calcrete soil up to several meters thick. The calcrete ("caliche") is a massive white calcium carbonate unit which generally has a soil texture of sandy clay loam. Where calcrete horizons are exposed on the surface or are shallowly buried, the soils are classified as Aridisols, a soil order having diagnostic subsurface soil horizons (in this case, the calcrete).

The Basin Alluvial EMU consists of silt and clay soils in low-lying playas and other depressions that are subject to occasional flooding. The basin alluvial areas are the most productive lowland areas and are valuable for wildlife habitat.

Soils on the margins of the basins are also mainly Entisols and Aridisols, and are predominantly alluvial (derived from water-deposited sediments). The Foothill/Bajada EMU consists of alluvial fans and toe slopes that border higher elevations. The texture for these alluvial soils is typically sandy loam, but the soils also contain variable amounts rock fragments eroded from the adjacent mountains. Soils in the upper elevations of the Foothill/Bajada EMU consist of shallow loamy or gravely soils atop sedimentary or igneous bedrock. Soils comprising these fan-piedmont areas of Fort Bliss are susceptible to gully and sheet erosion from running water and less prone to wind erosion.

The Otero Mesa EMU, in the eastern part of Fort Bliss, contains deep, well-drained, sandy and loamy soils. The region is an elevated plateau that receives more rainfall than the lower elevation basins to the west, resulting in grassland mixed with shrubs.

The Hueco, Organ, Franklin and Sacramento mountains EMUs consist of higher elevation shallow-to-bedrock soils in mountain valleys that support brushy or woodland vegetation. The mountain EMUs consist of a complex mix of soils with a variety of parent materials forming in complex terrain. Water erosion is a potential hazard if plant cover is disturbed.

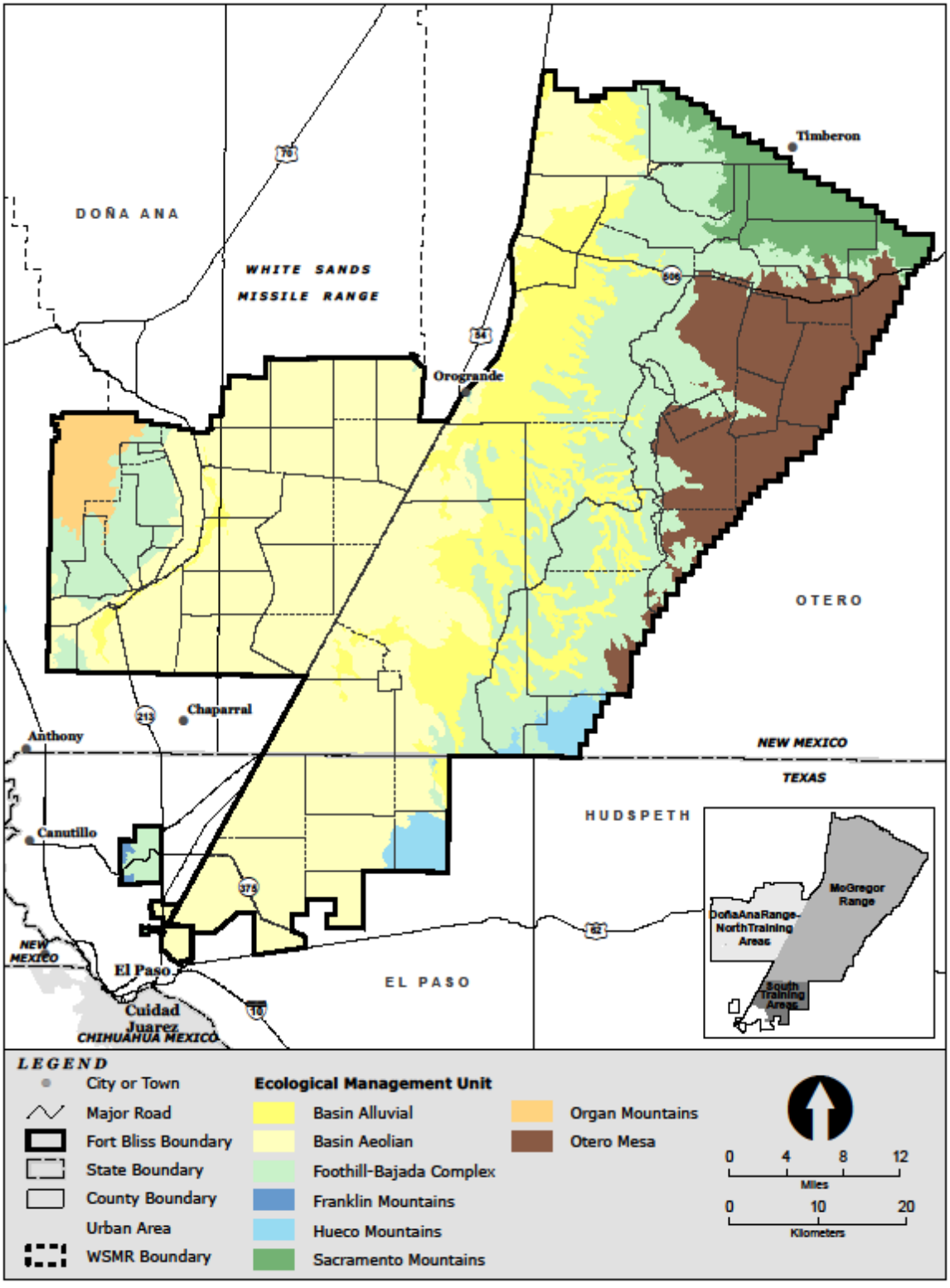

Figure 4.2-2. Map of Fort Bliss Ecological Management Units

Physical and microbiotic soil crusts are found in certain areas throughout Fort Bliss, except for active dune fields. Physical crusts result from evaporation of water and re-precipitation of soluble minerals. Microbiotic crusts form from the activity of soil microorganisms as a dark, cohesive surface layer. Both types of crusts tend to stabilize the soil surface and protect underlying soils from erosion.

More detailed information on Fort Bliss soils can be found in the Fort Bliss Soil Survey (USDA, 2004) which includes physical, chemical, and engineering properties, as well as limitations for military uses and ecological site descriptions and classifications. The soil survey contains data characterizing current conditions of soils, vegetation, and overall ecology, which may be useful in planning military actions and selecting sites for construction or training purposes.

4.2.6.2 Environmental Consequences

No Action Alternative

Minor adverse impacts are anticipated under the No Action Alternative. Fort Bliss would continue its infantry and mechanized training, to include impacts to soils from removal of or damage to vegetation, digging activities, ground disturbance from vehicles, and ammunition or explosives used in training events. The installation's ITAM program conducts monitoring, rehabilitation, and maintenance and repair on areas of high use such as drop zones, artillery firing positions, observation points, and ranges.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

The reduction of up to 8,000 Soldiers from Fort Bliss would lead to minor beneficial impacts. The implementation of this alternative would lead to a marginal decrease in wind and water erosion and an overall lessening of soil impacts. With fewer Soldiers on the installation, soils in the training areas would potentially have more opportunity to recover and allow crusts to regenerate. Fewer military vehicle traverses would lead to marginally less fugitive dust released into the air and also slightly reduce the potential for soil compaction. This alternative includes the reduction of no longer needed facilities that could result in short-term adverse impacts from demolition and temporary exposure of bare soils to rain and water and wind erosion. However, these impacts would be short term in duration. Overall, there would be anticipated beneficial long-term impacts from reduced training and more opportunities for land rehabilitation and natural rest and recovery of the landscape. It is anticipated that there would be less soil erosion attributable to a reduction in training activities.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Direct and indirect minor adverse impacts on soils would marginally increase from an additional 3,000 Soldiers using the Fort Bliss Training Complex. These effects would include surface-disturbing activities such off-road vehicle maneuvers, and the possible need for construction of additional buildings, roads, and firing ranges.

Potential effects on soils would lead to a minor increase in wind and water erosion, depending upon several factors such as the types of military units being trained, how widespread or limited (in area) the disturbance would be, and the length of time the soils would be left to recover or "rest" following disturbance. An increase in training events would result in slightly more airborne fugitive dust released, primarily through vehicle traverses on dirt roads and off-road.

Foot traffic from additional Soldier training would have minimal impact on the installation's soils. Additional tracked and wheeled military vehicle traverses during off-road maneuvers may result in a slightly greater degree of disruption to soils crusts and an increase in soil compaction in

certain areas. Soils compaction can damage or destroy soil structure and accelerate soil erosion.

The Army's ITAM program on Fort Bliss is responsible for identifying and managing soil erosion (e.g., rill and gully erosion) that is the direct result of training. This is best accomplished through a policy of monitoring and mitigation-through-design to maintain functional natural systems so as to preserve training opportunities on Fort Bliss.

4.2.7 Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species)

4.2.7.1 Affected Environment

Vegetation Communities. Fort Bliss exhibits a high degree of biodiversity due to its varied topography and large size (approximately 1.1 million acres). Of the approximately 4,000 plant species found in New Mexico, an estimated 300 nonvascular (lichen, mosses, liverworts) and 1,200 vascular (ferns, fern allies, ephedras, conifers, flowering plants) species occur on Fort Bliss, with over 800 taxa in the Organ Mountains alone (U.S. Army, 2001). Plant communities on the installation range from the Chihuahuan Desert plant communities in the Tularosa Basin to Rocky Mountain conifer forests in the Organ Mountains and significant grama grasslands on Otero Mesa (U.S. Army, 2000). Otero Mesa is dominated by grassland communities. The various types of shrubland total 67 percent, while there are 31 percent grasslands, less than 1 percent woodlands, and less than 1 percent of facilities.

Fauna. The borderlands region of New Mexico and Texas is a center of biodiversity in temperate North America for birds, mammals, amphibians and reptiles (Parmenter et al., 1995; Parmenter and Van Devender, 1995). There are also numerous mammals occurring in the region, some unique to the area. In addition, the highest known arthropod diversity in North America is found in the Southwest (Danks, 1994), and several groups of arthropods have their centers of diversity for North America in the borderlands region (Parmenter et al., 1995).

Fort Bliss supports a relatively high faunal diversity as well. Approximately 335 species of birds, 58 species of mammals, 39 species of reptiles and eight species of amphibians are known to occur on Fort Bliss. Many of the birds and mammals (and a good proportion of the herpetofauna) found on Fort Bliss are those generally found in the intermountain west, with a substantial great plains influence (Parmenter et al., 1995; Parmenter and Van Devender, 1995).

Threatened and Endangered Species. Three categories of wildlife and plants with special status are included in this section:

- **Federally-Listed Threatened and Endangered Species.** The ESA provides protection to species listed as endangered or threatened. Endangered species are defined as those species that are at risk of extinction in all or a significant portion of their range. Threatened species are those that could be listed as endangered in the near future if declines in populations or available habitats continue.
- **State-Listed Threatened and Endangered Species.** New Mexico and Texas maintain their own lists of state endangered and threatened plant and animal species that have shown declines within respective states. These species may or may not be included on federal ESA lists.
- **Other-Sensitive Species.** These include federal candidates for listing, species proposed for federal listing, and state-listed sensitive species and species of concern – including those recognized as Species of Greatest Conservation Need. The USFWS also has a species of concern designation. Federal candidate species are those for which the USFWS has sufficient information on biological vulnerability and threats to

support proposals to list them as endangered or threatened, but issuance of proposed rules for listing these species is precluded by higher priority listing actions. Federal proposed species are those proposed for listing as endangered and threatened under the ESA, and for which formal ruling is in progress. Species of concern are those identified to receive attention for planning purposes under federal or state agencies. At present, none of those species receive legal protection under the ESA.

Designated Critical Habitat. "Critical habitat" is a term used under ESA to define a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that may be needed for its recovery. Fort Bliss does not currently contain any federally-designated threatened or endangered species' critical habitat.

Fort Bliss Federally-Listed Species. Table 4.2-2 includes 57 sensitive species of flora and fauna known to occur, or having the potential to occur, on Fort Bliss. The list includes current species' federal and (or) state status and provides brief comments on known occurrence location within the installation. Because of the diversity of habitats on Fort Bliss, there is the potential that species occur that have not been identified or confirmed on post. Continued monitoring and improved documentation of Fort Bliss' natural environment ensures that sensitive species receive adequate protection in the event that a new population is discovered.

Of the 57 sensitive plant and animal species, 32 have federal special status. However, only seven species are federally-listed as threatened or endangered under ESA and one is a candidate for listing. Of these seven listed species, only the Sneed's pincushion cactus (*Coryphantha Sneedii var. Sneedii*) and Sprague's pipit (*Anthus spragueii*) are known to consistently occur on Fort Bliss. The remaining six species (Kuenzler's hedgehog cactus [*Echinocereus fendleri var. kuenzleri*], interior least tern [*Sterna antillarum athalassos*], yellow-billed cuckoo [*Coccyzus americanus*], southwestern willow flycatcher [*Empidonax trailii extimus*], piping plover [*Charadrius melodus*], and Mexican spotted owl [*Strix occidentalis lucida*]) are not known to occur; have no suitable habitat or insufficient habitat to maintain a population; or exist as rare, transitory, or seasonal migrants, and breeding is not known to occur on Fort Bliss. Surveys for the northern aplomado falcon, which has been designated as a Nonessential Experimental Population within the states of New Mexico and Arizona have observed on Fort Bliss, but only as transients.

Table 4.2-2. Sensitive Species Known to Occur or Having the Potential to Occur on Fort Bliss

Common Name	Scientific Name	Status			Known Location on Fort Bliss
		Federal	New Mexico	Texas	
Plants					
Sneed's pincushion cactus	(*Coryphantha Sneedii* var. *Sneedii*)	E	E	—	Limestone Hills, Doña Ana Range-North Training Areas.

Common Name	Scientific Name	Status			Known Location on Fort Bliss
		Federal	New Mexico	Texas	
Kuenzler hedgehog cactus	(*Echinocereus fendleri* var. *kuenzleri*)	E	E	—	Not known to occur on Fort Bliss, but is found just outside base on Lincoln National Forest. Potential habitat on extreme northern McGregor Range in the Sacramento Mountains.
Alamo beardtongue	(*Penstemon alamosensis*)	SOC	S	—	Hueco Mountains, South Training Areas.
Organ Mountains evening primrose	(*Oenothera organensis*)	SOC	S	—	Organ Mountains, Doña Ana Range-North Training Areas.
Organ Mountains figwort	(*Scrophularia laevis*)	SOC	S	—	Organ Mountains, Doña Ana Range-North Training Areas.
Standley whitlowgrass	(*Draba standleyi*)	SOC	S	—	Organ Mountains, Doña Ana Range-North Training Areas.
Desert night blooming cereus	(*Peniocereus greggii* var. *greggii*)	SOC	E	—	Desert shrublands, Doña Ana Range-North Training Areas.
Hueco Mountains rock daisy	(*Perityle huecoensis*)	SOC	—	—	Hueco Mountains, South Training Areas.
Nodding cliff daisy	(*Perityle cernua*)	SOC	S	—	Organ Mountains, Doña Ana Range-North Training Areas.
Sand prickly pear	(*Opuntia arenaria*)	SOC	E	—	Low Potential to occur on Fort Bliss.
Organ Mountains pincushion cactus	(*Escobaria organensis*)	—	E	—	Organ Mountains, Doña Ana Range-North Training Areas.
Crested coral-root	(*Hexalectris spicata*)	—	E	—	Organ Mountains, Doña Ana Range-North Training Areas.
Sandhill goosefoot	(*Chenopodium cycloides*)	SOC	—	—	Occasional in sandy, disturbed places, Doña Ana Range-North Training Areas.
Invertebrates					
Franklin Mountain talussnail	(*Sonorella metcalfi*)	—	SGCN	—	Rock talus slopes in the Franklin Mountains and possible in the Organ Mountains.
Anthony blister beetle	(*Lytta mirifica*)	SOC	SGCN	—	Not known to occur on Fort Bliss, but habitat occurs in sand dunes.

Common Name	Scientific Name	Status			Known Location on Fort Bliss
		Federal	New Mexico	Texas	
Los Olmos tiger beetle	(*Cicindela nevadica olmosa*)	SOC	SGCN	—	Not known to occur on Fort Bliss, could occur in areas of limestone soil.
Reptiles					
Texas horned lizard	(*Phrynosoma cornutum*)	—	—	T	Widespread throughout post.
Mountain short-horned lizard Biota Information System of New Mexico (BISON-M) has	(*Phrynosoma douglasii hernandezii*) *Phrynosoma hernandezi hernandezii*	—	—	T	Species occurs on McGregor Range; subspecies not recorded on post.
Gray-banded kingsnake	(*Lampropeltis alterna*)	—	E, SGCN	—	Known from Hueco Tanks State Park. Possible in Hueco Mountains of South Training Areas and on McGregor Range.
Mottled rock rattlesnake	(*Crotalus lepidus lepidus*)	—	T, SGCN	—	Species documented from the Organ Mountains; subspecies not recorded on post.
Texas lyre snake	(*Trimorphodon biscutatus vilkinsoni*)	—	—	T	Castner Range in Texas.
Birds					
Interior least tern	(*Sterna antillarum athalassos*)	E	E, SGCN	E	Not known to occur on Fort Bliss; could occur as very rare migrant at sewage lagoon on Fort Bliss.
Northern aplomado falcon	(*Falco femoralis septentrionalis*)	E[1]	E, SGCN	E	Several sightings of transient birds on Fort Bliss near Otero Mesa, McGregor Range.
Southwestern willow flycatcher	(*Empidonax trailii extimus*)	E	E, SGCN	—	Occasional migrant on McGregor Range.
Bald eagle	(*Haliaeetus leucocephalus*)	—	T, SGCN	E	Forages in Sacramento Mountains, McGregor Range; roosts on Lincoln National Forest.

Common Name	Scientific Name	Status			Known Location on Fort Bliss
		Federal	New Mexico	Texas	
Piping plover	(*Charadrius melodus*)	T	T	T	Rare migrant on McGregor Range; observed once in 1987 at sewage lagoon on Fort Bliss.
Mexican spotted owl	(*Strix occidentalis lucida*)	T	S, SGCN	T	Very rare on Fort Bliss; not known to breed on site; best potential habitat in Organ mountains, Doña Ana Range-North Training Areas.
Yellow-billed cuckoo	(*Coccyzus americanus*)	C	S	—	Uncommon migrant on Fort Bliss; lack of riparian habitat.
Sprague's Pipit	(*Anthus spragueii*)	C	—	—	Uncommon winter resident in grama grasslands on Otero Mesa.
Peregrine falcon	(*Falco peregrinus anatum*)	SOC	T, SGCN	E	Migrant and occasionally nesting in some mountains of Fort Bliss.
Mountain plover	(*Charadrius montanus*)	SOC	S, SGCN	—	Several sightings on Otero Mesa, McGregor Range.
Black tern	(*Chlidonias niger*)	SOC	S, SGCN	—	Regular migrant throughout Fort Bliss at available water sources.
White-faced ibis	(*Plegadis chihi*)	—	SGCN	T	Regular migrant at sewage lagoons on McGregor Range and playas or earthen tanks.
Northern goshawk	(*Accipiter gentilis*)	SOC	S, SGCN	—	Uncommon migrant on Fort Bliss.
Zone-tailed hawk	(*Buteo albonotatus*)	—	—	T	Uncommon migrant on Fort Bliss.
Ferruginous hawk	(*Buteo regalis*)	—	SGCN	—	Wintering and migrant species; mostly on Otero Mesa, McGregor Range.

Common Name	Scientific Name	Status			Known Location on Fort Bliss
		Federal	New Mexico	Texas	
Western burrowing owl	(*Athene cunicularia*)	SOC	SGCN	—	Occurs throughout Fort Bliss except the mountain areas; occurs in all desert shrubland and grassland vegetative communities on Fort Bliss.
Costa's hummingbird	(*Calypte costae*)	—	T, SGCN	—	Uncommon migrant in arroyo-riparian habitat on Fort Bliss.
Loggerhead shrike	(*Lanius ludovicianus*)	SOC	S, SGCN	—	Winter and breeding bird from Otero Mesa and Tularosa Basin.
Baird's sparrow	(*Ammodramus bairdii*)	SOC	T, SGCN	—	Migrates through and winters in dense grasslands primarily on Otero Mesa.
Varied bunting	(*Passerina versicolor*)	—	T, SGCN	—	Very rare on Fort Bliss.
Bell's vireo	(*Vireo bellii*)	SOC	T, SGCN	—	Occasional on Fort Bliss in heavy mesquite thickets in arroyo-riparian drainage habitats.
Gray vireo	(*Vireo vicinior*)	—	T, SGCN	—	Nests in the Organ Mountains, Doña Ana Range-North Training Areas.
Mammals					
Small-footed myotis	(*Myotis ciliolabrum*)	—	S	—	Distribution unknown.
Occult little brown bat	(*Myotis occultus*)	—	S, SGCN	—	Distribution unknown.
Fringed myotis	(*Myotis thysanodes*)	—	S	—	Reported from the Sacramento Mountains foothills, McGregor Range.
Cave myotis	(*Myotis velifera*)	—	S	—	Distribution unknown.
Long-legged myotis	(*Myotis volans*)	—	S	—	Distribution unknown.
Yuma myotis	(*Myotis yumanensis*)	—	S	—	Distribution unknown.
Townsend's pale big-eared bat	(*Corynorhinus townsendii pallescens*)	SOC	S	—	Distribution unknown.
Big free-tailed bat	(*Nyctinomops macrotis*)	—	S	—	Distribution unknown.
Spotted bat	(*Euderma maculatum*)	—	T, SGCN	T	Distribution unknown.
Townsend's pale big-eared bat	(*Corynorhinus townsendii pallescens*)	SOC	S	—	Distribution unknown.

Common Name	Scientific Name	Status			Known Location on Fort Bliss
		Federal	New Mexico	Texas	
Gray-footed chipmunk	(*Neotamias canipes*)	—	S	—	Occurs in woodland and forest habitats in the Sacramento Mountains foothills on McGregor Range.
Organ Mountain Colorado chipmunk	(*Neotamias quadrivittatus australis*)	SOC	T	—	Occurs in Organ Mountains, Doña Ana Range -North Training Areas.
Arizona black-tailed prairie dog	(*Cynomys ludovicianus arizonensis*)	SOC	S, SGCN	—	Occurs on Otero Mesa, McGregor Range.
Desert bighorn sheep	(*Ovis canadensis mexicana*)	—	E, SGCN	—	Does not occur on Fort Bliss; previously existed in Organ Mountains on Doña Ana Range-North Training Areas.

Key: C = Candidate, E = Endangered, S = Sensitive, SGCN = Species of Greatest Conservation Need, SOC = Species of Concern, T = Threatened,

[1] This species has been designated as a Nonessential Experimental Population within the states of New Mexico and Arizona, carrying 10(j) status under ESA. Thus, the species is designated as threatened within these designated geographic confines and is separated from other populations' federal listing status.

4.2.7.2 Environmental Consequences

No Action Alternative

Negligible adverse effects would occur at Fort Bliss under the No Action Alternative. Fort Bliss would continue to adhere to its existing military land use as described in the *Fort Bliss Army Growth and Force Structure Realignment EIS* (U.S. Army, 2010) and resource management plans to further minimize and monitor any potential effects. Units are briefed prior to each training event regarding sensitive areas on post, such as protected species habitat, and what is and is not allowed within certain areas, such as within the protective buffer surrounding sensitive species during certain times of the year.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Beneficial impacts to biological resources as a result of the implementation of Alternative 1 are anticipated. Scheduling conflicts for training area access to conduct resource monitoring would be reduced. Proactive conservation management practices would be more easily accomplished with reduced mission throughput.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Minor adverse impacts are anticipated as a result of the implementation of Alternative 2. The increase in the number of Soldiers is less than 10 percent above the current level. The additional training would not modify military land use analyzed in the *Fort Bliss Army Growth and Force Structure Realignment EIS*; therefore, this alternative represents training types already analyzed over the same locations already analyzed (U.S. Army, 2010). While this moderate force augmentation would increase traffic in the training lands and ranges, it would

not cause significant degradation or destruction of threatened and endangered species or rare species habitats. Fort Bliss proactively manages its conservation programs within the installation's training areas. Access to training lands and ranges for the purpose of threatened and endangered species monitoring and habitat management, however, would become more difficult with increased throughput.

4.2.8 Water Resources

4.2.8.1 Affected Environment

Water Supply. The Fort Bliss main post water distribution system supplies water to the main post proper, the lower, middle, and upper Beaumont areas, the William Beaumont Army Medical Center, and the Logan Heights area. The main post can also supply Biggs Army Airfield. This line, however, is normally closed and Biggs Army Airfield produces its own water. The main post receives its water from two primary sources: The Tobin Well Field and the Pike Well Field, with a peak production of 15.8 mgd as well as water from the El Paso Water Utilities for East Bliss, the McGregor Range Camp, and portions of the main cantonment, Emergency interconnections with the City of El Paso Water Utility (EPWU) are also available.

Biggs Army Airfield Water Distribution System supplies water to the Biggs Army Airfield proper, East Biggs, and Aero Vista Housing. Water is supplied by two wells with a combined maximum capacity of 2.8 mgd. Emergency interconnection with the EPWU is also available. The East Biggs area currently receives water off of the Biggs Army Airfield Grid, but this area's primary potable water system source is from the EPWU (estimated 5.0 mgd maximum water usage).

Municipal water for the EPWU is supplied from groundwater from the Hueco and Mesilla Bolsons and surface water from the Rio Grande. EPWU drastically reduced its reliance on the pumping of the Hueco Bolson, utilizing wells in the Mesilla Bolson (41 mgd) and reliance on surface water plants, which have a combined capacity of 100 mgd. Under normal river flow conditions, the surface water plants operate seven months (mid March – mid October) during the year. Current total demand is about 120,000 acre feet per year. Per capita demand has been reduced from about 225 gallons per person per day in the 1970s to about 153 gallons per person per day in 2002. The strategies implemented in the 1980s and 1990s outlined above have resulted in reduced Hueco Bolson pumping. Due to continued concern regarding brackish groundwater intrusion into wellfield areas and to augment the supply of potable water, EPWU has constructed a desalination plant that came online in August 2007. This plant has the capacity to withdraw 34,000 acre feet per year (30.5 mgd) of brackish water from the Hueco Bolson and produce 31,000 acre feet per year (27.5 mgd) of potable water. The facility; however, currently is producing only 3.5 mgd since the demand for the entire capacity has not been reached (Reinert, 2012).

McGregor Range Camp receives potable water from the City of El Paso; water from the grid also supplies Meyer Range. According to the McGregor Range Land Withdrawal Legislative EIS, the water line from EPWU has a water supply capacity of 2,115 gpm or 3.046 mgd. Doña Ana Range Camp water is supplied by two on-site wells, with a combined maximum capacity of 700 gpm. Water for the Oro Grande Range Camp is produced by the White Sands Missile Range Current max pumping capacity is approximately 1,000 gpm. Water from the Oro Grande Range Camp is trucked to the SHORAD and Red Eye Sites on the North McGregor Range. Hueco Range Camp is supplied one well that has a capacity of approximately 250 gpm. Site Monitor is supplied by one well that has a capacity of about 130 gpm.

Wastewater. Wastewater generated at the main cantonment area flows through five connections to the City of El Paso's sewer system. This wastewater is treated by a privatized system before receiving additional treatment at the Haskell Street WWTP operated by the City

of El Paso. The Haskell Street WWTP has a treatment capacity of 27.7 mgd. Fort Bliss typically uses approximately 10.5 percent of the plant's treatment capacity.

Wastewater generated at training areas is either treated in lagoons or collected in septic tanks that flow to drain fields or dry wells.

Stormwater. MS4 consists of street curb and gutter, pipes, channels, three lift stations, and both detention and retention basins. In general, the MS4 serving the urbanized portion of the installation west of Airport Road is interconnected with the City of El Paso MS4 and has connection to the City MS4 stormwater outfalls to the Rio Grande. The Fort Bliss MS4 serving Biggs Army Airfield and East Bliss is served by street curb and gutter, pipes, channels and retention basins that have no interconnection with the City MS4. Operation of the Fort Bliss MS4 is regulated under the Texas Pollutant Discharge Elimination System (TPDES) Small MS4 General Permit and discharges from qualifying industrial activities on post are regulated under the TPDES Multi Sector General Permit. Fort Bliss also implements stormwater BMPs for the ranges in New Mexico.

4.2.8.2 Environmental Consequences

No Action Alternative

The No Action Alternative would have minor adverse effects to water resources. No change from existing conditions would occur and all construction, operation, and maintenance projects already under way have a NPDES permit (and other applicable permits) and are operating in adherence to the permit guidance. Training activities would continue, both on ranges and training lands; however, impacts to surface waters would be negligible. Fort Bliss would continue to use water resources at its current rate drawing water from current sources. To reduce impacts and increase regional water availability, Fort Bliss is currently evaluating options to upgrade the pipelines from EPWU connections and is implementing aggressive water conservation measures, policies, and technologies as part of the Army's Installation Sustainability and Net Zero conservation initiatives.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Beneficial impacts to the water supply are anticipated as a result of the implementation of Alternative 1. A loss of up to 8,000 Soldiers would reduce regional demand for potable water and would increase available wastewater treatment capacity. Any demolition disturbance over 1 acre as part of facilities reduction would require a stormwater permit, which would entail identification and implementation of mitigation strategies to reduce impacts associated with stormwater runoff during and after construction.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Overall, less than significant impacts are anticipated as a result of the implementation of Alternative 2. Soldier increases at Fort Bliss would increase pressures put on the regional water demand, but new sources of potable water have been developed to accommodate regional growth. For example, the desalination plant can increase production if there is an increased demand due to the stationing.

There is a limited water supply and limited capacity for wastewater treatment for the region and installation, but a growth of up to 3,000 Soldiers and their dependents would fall within the installations current capacity for wastewater treatment. To reduce impacts and increase regional water availability, Fort Bliss is currently evaluating options to upgrade the pipelines from EPWU connections and is evaluating aggressive water conservation measures, policies and technologies. The increase in demand in regional potable water is actively being

addressed by the El Paso Water Utilities who have initiated a vigorous program of water conservation and reuse, purchased water rights near Dell City, and ranches in west Texas having large amounts of underground water supplies (Reinert, 2012). The Far West Texas Water Planning Group have initiated planning for long-term regional growth that include: evaluation of irrigation efficiency strategies for far West Texas; conceptual evaluation of surface water Storage in El Paso County; and groundwater data acquisition in Far West Texas (TWDB, 2011). These and other planning strategies among various city and county agencies assure that an increase of 3,000 Soldiers at Fort Bliss would have minimal impacts on the available regional supply of potable water.

Any new construction and land disturbance over 1 acre in Texas would require a stormwater construction permit which would entail identification and implementation of mitigation strategies to reduce impacts associated with stormwater runoff during and after construction. Fort Bliss also implements stormwater BMPs in New Mexico.

4.2.9 Socioeconomics

4.2.9.1 Affected Environment

The ROI consists of Fort Bliss and Doña Ana and Otero counties in New Mexico, and El Paso County in Texas. Fort Bliss is located in New Mexico and Texas. With 1.1 million acres, it is the Army's second largest installation, next to White Sands Missile Range.

Population and Demographics. The Fort Bliss population is measured in three different ways. The daily working population is 32,097, and consists of full-time Soldiers and Army civilian employees working on post. The population that lives on Fort Bliss consists of 10,322 Soldiers and an estimated 15,689 dependents, for a total on-post resident population of 26,011. Finally, the portion of the ROI population related to Fort Bliss is 53,066 and consists of Soldiers, civilian employees, and their dependents living off post.

The ROI county population is over 1.075 million. Compared to 2000, the 2010 population increased in Doña Ana, Otero, and El Paso counties (Table 4.2-3). The racial and ethnic composition of the ROI is presented in Table 4.2-4.

Table 4.2-3. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Doña Ana	210,000	+ 0.3
Otero	65,000	+ 2.4
El Paso	800,000	+ 17.8

Table 4.2-4. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
New Mexico	40	2	1	46	9	16	25
Texas	45	11	4	38	0	1	0
Doña Ana	30	1	1	66	1	1	0
Otero	53	3	6	35	1	2	0
El Paso	13	3	0	82	1	1	0

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased the states of New Mexico and Texas and in Doña Ana, Otero, and El Paso counties (Table 4.2-5). Employment, median home value, household income, and poverty levels are presented in Table 4.2-5.

Table 4.2-5. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
New Mexico	615,879	+ 12.1	150,500	42,830	18.20
Texas	8,925,096	+ 11.2	118,900	48,286	17.10
Doña Ana	50,549	+ 36.4	128,500	35,541	24.80
Otero	12,617	+ 1.1	97,400	35,557	20.20
El Paso	205,190	+2.7	95,200	36,078	23.70

There are currently 2,395 permanent military Family housing units under the control of Fort Bliss. These are all located in the cantonment among several neighborhoods. Family housing on Fort Bliss has been privatized under the Resident CI, and the contractor responsible for Fort Bliss Military Housing indicates that the construction of 1,708 additional homes is well underway (Belfour Beatty Communities, 2008). Unaccompanied housing is primarily located on the cantonment (4,748 units) and some units (2,320) located in the three range camps for temporary use during training exercises (U.S. Army, 2007). Fort Bliss also maintains about 1,124 units for temporary use including TDY personnel and Active Duty Families relocating to Fort Bliss.

Schools. Nine school districts surround Fort Bliss, but the majority of students from Fort Bliss (70 percent) attend El Paso ISD public schools. About 15 percent attend Socorro ISD public school, and about 12 percent attend Ysleta ISD public schools. Current total enrollment for Pre-K through 12 is 64,214 for the El Paso ISD (Texas Education Agency, 2012), 43,672 for the Socorro ISD (Texas Education Agency, 2012), and 44,376 for Ysleta ISD (Texas Education Agency, 2012) for a total of about 156,830 students. Attendance in other El Paso county school districts is negligible (U.S. Army, 2000). New Mexico schools serving Fort Bliss include the Las Cruces and Gadsden ISDs. Alamogordo ISD serves Otero County, but the residents of Otero County living in the Chaparral region attend Gadsden ISD public schools under a cost agreement between the school districts. The child development services program in Fort Bliss lists the following El Paso area schools as most affected by Fort Bliss stationing actions: Nixon Elementary, Travis Elementary, Milam Elementary, Logan Elementary, Bliss Elementary, Burnet Elementary, Hughey Elementary, MacArthur Elementary/Intermediate, Ross Middle, Bassett Middle, Richardson Middle, Chapin High, Andress High, and Austin High. El Paso area schools were planning a 9 year build-up to accommodate increased enrollment resulting from BRAC and other initiatives beginning in 2007.

Public Health and Safety.

- **Police Services.** Fort Bliss has exclusive jurisdiction over the cantonment and much of the Doña Ana Range. Fort Bliss has proprietary jurisdiction in Logan Heights and lands withdrawn from other government entities such as McGregor Range. Primary jurisdiction in the Fort Bliss area for law enforcement is with the City of El Paso Police Department. In 2005, there was one law enforcement officer for every 100 people living on post.

- **Fire and Emergency Services.** The Fort Bliss Fire Department responds to fires within the installation. They work cooperatively with the BLM to fight fires on McGregor Range.
- **Medical Facilities.** William Beaumont Army Medical Center is an Army regional hospital and serves the needs of over 400,000 beneficiaries. In addition, it is one of two trauma centers in the ROI. Adjacent to the WBAMC is the Veterans Affairs Health Care Center. Additional clinics are located at the troop medical center in the cantonment, Biggs Army Airfield, and small facilities associated with each unit. There is also a dental clinic and a veterinary clinic located in the cantonment.

Family Support Services. The Fort Bliss Army Community Service (ACS), which is a division of the Directorate of Family Morale, Welfare, and Recreation (FMWR), assists Soldiers and their Families with programs that include Army Emergency Relief, Army Family Action Plan, Army Volunteer Corps, Employment Readiness, Exceptional Family Member, Family Advocacy, Financial Readiness, Information & Referral, & Relocation Readiness. The Fort Bliss Child, Youth & School Services, also under FMWR, provides recreational and learning programs for children and teens at Fort Bliss.

Recreation Facilities. Fort Bliss FMWR provides its military community, Families, and civilians three aquatics centers (an indoor facility, an outdoor facility, and a children's splash park), sport and fitness programs (intramurals program, group fitness classes, strength and conditioning/fitness programs, and mission essential fitness programs), leisure activities (a bowling center, two golf courses, tennis club, and group hiking and camping trips) and skills development opportunities (including an auto repair center and framing classes at Framing Fort Bliss).

4.2.9.2 Environmental Consequences

No Action Alternative

The No Action Alternative would result in negligible effects to existing socioeconomic resources. To accommodate Army population increases at Fort Bliss from recent stationing decisions, the Army has created additional Residential Community Initiative (RCI) housing for Families and single Soldiers and modernized on-post housing and barracks. Other projects to enhance quality of life, such as shoppettes, gas stations, playgrounds, and similar sites have either been constructed or are pending.

Fort Bliss' continuing operations represent a beneficial source of regional economic activity. No additional impacts to housing, public and social services, public schools, public safety, or recreational activities are anticipated.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of up to 8,000 military employees (Soldiers and Army civilian employees), each with an average annual income of $41,830. In addition, this alternative would affect an estimated 4,464 spouses and 7,680 dependent children for a total estimated potential impact to 12,144 dependents. The total population of military employees and their dependents directly affected by Alternative 1 would be projected to be 20,144.

Based on the EIFS analysis, there would be no significant impacts for sales volume, income, or employment. There would be significant impacts for population. The range of values that represents a significant economic impact in accordance with the EIFS model are presented in Table 4.2-6, along with the predicted percentages for Alternative 1. Table 4.2-7 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.2-6. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	7.98	8.07	3.90	1.21
Economic Contraction Significance Value	- 7.15	- 6.54	- 4.29	- 1.66
Forecast Value	- 2.34	- 2.18	- 3.59	- 1.87

Table 4.2-7. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	$548,190,500	$403,944,100	- 8,829 (Direct) - 1,947 (Indirect) - 10,776 (Total)	- 20,144
Percent	- 2.34 (Annual Sales)	- 2.18	- 3.59	- 1.87

The total annual loss in volume of direct and secondary sales in the ROI represents an estimated -2.34 percent reduction. State tax revenues would decrease by approximately $34.26 million as a result of decreased sales. Some counties within the ROI supplement the state sales tax of 6.25 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by an estimated 2.18 percent. While 8,000 direct Soldier and Army civilian positions would be lost within the ROI, EIFS estimates another 829 military contract service jobs would be lost as a direct result of the implementation of Alternative 1, and an additional 1,947 job losses would indirectly occur as a result of a reduction in demand for goods and services in the ROI. The total reduction in demand for goods and services within the ROI is projected to lead to a loss of 10,776 non-farm jobs, or a 3.59 percent change in regional non-farm employment. The total number of employed non-farm positions in the ROI is estimated to be approximately 300,000. A significant population reduction of 1.87 percent within the ROI is anticipated as a result of this alternative. Of the approximately 1.075 million people (including those residing on Fort Bliss) that live within the ROI, 20,144 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This could lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes Army civilian and military members and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the Army would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.2-8 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.2-8. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- $365,808,847 (Local) - $484,915,278 (State)	- $406,640,553	- 9,037 (Direct) - 1,152 (Indirect) - 10,189 (Total)
Percent	- 1.56 (Total Regional)	- 2.20	- 3.39

The total annual loss in direct and indirect sales in the region represents an estimated -1.56 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 0.78 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, state tax revenues would decrease by approximately $30.31 million as a result of the loss in revenue from sales reductions, which would be $3.29 million less in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by 2.20 percent, slightly more than the 2.18 percent reduction projected by EIFS. While 8,000 direct Soldier and Army civilian employee positions would be lost within the ROI, RECONS estimates another 1,037 direct contract and service jobs would be lost, and an additional 1,152 job losses would occur indirectly from indirect reduction in demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 10,189 jobs, or a -3.39 percent change in non-farm regional employment, which would be 0.20 percentage points less than projected by EIFS.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 1 would lead to a net reduction of economic activity within the ROI of roughly the same order of magnitude.

Removal of 8,000 Soldiers would result in a reduction of 12,144 dependents, of which about 3,976 would be school age children using according to the latest DMDC numbers (DMDC, 2012). The removal of 3,976 students would result in the loss of about $3 million of DoD impact assistance to the school districts. This would have a moderate impact on school budgets.

Reduction in personnel would have minor impacts to emergency services and recreational resources since the reduction is anticipated to lower the need for these services.

In general, Alternative 1 would not have a disproportionate adverse impact to minorities, economically disadvantaged populations or children in the ROI. Fort Bliss anticipates that job loss would be felt across economic sectors and at all income levels and spread geographically throughout the ROI. The Hispanic populations of El Paso County and Doña Ana County are disproportionately higher when compared to the population of Texas. Seen at the state-wide level, adverse impacts in the ROI represent a disproportionate adverse impact to Hispanic populations.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Economic Impacts. Alternative 2 would result in the increase of up to 3,000 Soldiers, each with an average annual income of $41,830. In addition, this alternative would affect an estimated 1,674 spouses and 2,880 dependent children for a total estimated potential impact to 4,554 dependents. The total population of military employees and their dependents directly affected by Alternative 2 would be projected to be 7,554.

Based on the EIFS analysis, there would be no significant impacts for sales volume, income, employment, or population. The range of values that represents a significant economic impact in accordance with the EIFS model are presented in Table 4.2-9, along with the predicted percentages for Alternative 2. Table 4.2-10 presents the projected economic impacts to the region for Alternative 2 as assessed by the Army's EIFS model.

Table 4.2-9. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 2

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	7.98	8.07	3.9	1.21
Economic Contraction Significance Value	- 7.15	- 6.54	- 4.29	- 1.66
Forecast Value	0.88	0.82	1.34	0.70

Table 4.2-10. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	$205,571,500	$151,479,000	3,311 (Direct) 730 (Indirect) 4,041 (Total)	7,554
Percent	0.88	0.82	1.34	0.70

The total annual gain in direct and secondary sales in the ROI represents an estimated 0.88 percent increase. State tax revenues would increase by approximately $12.85 million as a result of increased sales. Some counties within the ROI supplement the state sales tax of 6.25 percent by varying percentages, and these additional local tax revenues would be gained at the county and local level. Regional income would increase by 0.82 percent. While 3,000 Soldiers would be gained within the ROI, EIFS estimates another 311 military contract service jobs would be gained directly as a result of Alternative 2, and an additional 730 jobs would be created from an increase in demand for goods and services in the ROI. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 4,041 non-farm jobs, or a 1.34 percent change in regional non-farm employment. The total number of employed positions (non-farm employment) in the ROI is estimated to be approximately 300,000. A population increase of 0.70 percent within the ROI is anticipated as a result of this alternative. Of the approximately 1.1 million people (including those residing on Fort Bliss) that live within the ROI, 7,554 military employees and their dependents would begin to reside in the area following the implementation of Alternative 2. This would lead to an increase in demand for housing, and decreased housing availability in the region. This would lead to a slight increase in median home values.

Table 4.2-11 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 2.

Table 4.2-11. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment
Total	$137,178,317 (Local) $238,329,001 (State)	$152,490,207	3,384 (Direct) 432 (Indirect) 3,821 (Total)
Percent	0.58 (Total Regional)	0.82	1.27

The total annual gain in direct and secondary sales in the ROI represents an estimated 0.58 percent change in total regional sales volume according to the RECONS model, an impact that is 0.30 percentage points less than projected by EIFS; however, gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, state tax revenues would increase by approximately $14.90 million as a result of the gain in revenue from sales reductions, which would be $1.71 million more additional state sales tax revenue that projected by the EIFS model. Regional income is projected by RECONS to increase by 0.82 percent, which is roughly equivalent to the increase projected by EIFS. While 3,000 Soldiers would be directly gained within the ROI, RECONS estimates another 384 direct contract and service jobs would be gained, and an additional 432 jobs would be created as a result of indirect increases in demand for goods and services in the ROI as a result of population increases. The total estimated increases in demand for goods and services within the ROI would lead to a gain of 3,821 jobs, or a 1.27 percent change in regional employment, which would be 0.07 percentage points less than projected by EIFS.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 2 would lead to a net beneficial impacts and growth of economic activity within the ROI of roughly the same magnitude.

An addition of 3,000 Soldiers would result in an increase of about 1,500 school age children. According to El Paso Independent School District planners, this increase in student numbers could be absorbed through school construction now underway and also planned for the district schools (Martinez, 2012). Student increases would result in the need for an additional 60 teachers. This would be a minor beneficial impact to the ROI as a whole.

Increases in the need for emergency services and recreational resources would be able to be absorbed since the planning triggered by the BRAC and Army Transformation Initiatives still have not been fully implemented. For example the planning called for six BCTs and two CABs being stationed at Fort Bliss (USACE, 2007). However, only four BCTs and one CAB will be authorized under these initiatives.

Housing pressure would increase as a result of the increased stationing. Plans and proposals are underway to increase Residential Communities Initiative housing on Fort Bliss such as various Public Private Capital Venture programs proposed by the Army Chief of Staff for Installation Management. The economy is presently sluggish in the ROI and an additional stationing of Soldiers would be a welcome stimulus for the economy (El Paso Times, 2012).

4.2.10 Energy Demand and Generation

4.2.10.1 Affected Environment

In the main cantonment area, the energy services include the El Paso Electric Company (EPEC) and the Texas Gas Service. The line supplying electrical power to this area from EPEC has a load capacity of 150 megavolt amperes. Currently, the main cantonment area has a peak

electrical demand of 30 megavolt amperes. This area consumes approximately 1 percent of power available from EPEC. Natural gas is the main heating fuel in this area supplied by Texas Gas Service. Currently, Fort Bliss is working with EPEC to set up new agreements and increase the installations production and use of energy derived from renewable sources as part of the installation's Net Zero initiative.

4.2.10.2 Environmental Consequences

No Action Alternative

The No Action Alternative would result in negligible energy demand and generation effects. Fort Bliss ranges and garrison area would continue to use and generate the same types and amounts of utility consumption for which the installation is already managing. Maintenance of existing utility systems would continue.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

In FY 2011 Fort Bliss consumed 339,056,533 kilowatt-hour (kWh). Prorating this consumption by 32,350 Soldiers yields 10,480 kWh per Soldier. The consumption from 8,000 Soldiers would be 83,840,000 kWh, or a decrease of 24 percent annual consumption (Rodriguez, 2012).

Alternative 1 would have beneficial overall impacts to energy demand. There would be less of a requirement for energy and less on-post usage of energy. Fort Bliss would continue to search for innovative ways to conserve energy as a result of this alternative.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

The consumption from 3,000 Soldiers would be 31,440,000 kWh, equivalent to a 9.3 percent increase in annual consumption. Excluding civilians from the calculation, adding 3,000 Soldiers would result in an 8.9 percent energy consumption increase (Rodriguez, 2012).

Growth of up to 3,000 Soldiers is anticipated to have a minor (low) impact resulting from energy demand and generation. Fort Bliss existing energy infrastructure has sufficient excess capacity, diversity, and scalability to readily absorb growth in Soldier and associated dependents at this level even though the increased Soldier and equipment strength would increase energy usage and demand.

4.2.11 Land Use Conflicts and Compatibility

4.2.11.1 Affected Environment

Fort Bliss is approximately 70 miles in length and varies from 30 to 50 miles in width. New Mexico contains 994,176 acres of the installation; 125,295 acres lie in Texas. The Doña Ana Firing Ranges lie on the westernmost portion of the fort. McGregor Missile Firing Range and Meyer Small Arms Range are located in the central and southern portions of the installation. McGregor Range is co-managed by Fort Bliss and Bureau of Land Management (BLM) under a Congressional withdrawal for military use. McGregor Range includes the Culp Canyon Wilderness Study Area and the McGregor Black Grama Grassland Area of Critical Environmental Concern. The 800,000-acre restricted area in the northeastern corner is managed by the BLM as grazing unit areas. BLM manages cattle grazing leases for those portions of McGregor Range that are also Army fee owned. Grazing in most cases is very compatible with the military mission. Within the 800,000-acre restricted area, 18,004 acres are managed as National Forest land under the jurisdiction of the U.S. Department of Agriculture (USDA), used by the Army under a Memorandum of Understanding (U.S. Army, 1995).

The military mission takes precedence over but can affect non military uses, activities, and infrastructure including cattle operations, recreation and rights-of-way (ROWs). Issues of development and encroachment, both on and off the installation, as a result of increased numbers of military personnel should be considered. Potential for land use changes on McGregor Range may be in conflict with BLM plans for the range. Sensitive visual resources may be adversely affected by proposed development and training activities. However, BLM public activities such as grazing and recreation do not trump the military mission and would cease if mission cannot accommodate them.

4.2.11.2 Environmental Consequences

No Action Alternative and Alternatives 1 and 2

Minor impacts are anticipated for all alternatives. Fort Bliss could benefit from the ability to demolish outdated, inefficient facilities as a result of the implementation of Alternative 1, and has the buildable space to accommodate cantonment growth and development land use as a result of Alternative 2. The installation has sufficient land available to either build the facilities needed for this stationing action, or would have sufficient vacant space in buildings that would be suitable to accommodate the influx of troops. Though there are some compatibility issues with grazing and recreation at McGregor Range, the Proposed Action is not likely to significantly impact land use in those areas and the military mission has primacy over these non-military land uses within the withdrawn lands.

4.2.12 Hazardous Materials and Hazardous Waste

4.2.12.1 Affected Environment

Hazardous chemicals used by the installation include acids, corrosives, caustics, glycols, compressed gases, aerosols, batteries, hydraulic fluids, solvents, paints, cleaning agents, pesticides, herbicides, lubricants, fire retardants, photographic chemicals, alcohols, insecticides, sealants, and ordnance. An installation HWMP provides detailed information on training; hazardous waste management roles and responsibilities, and hazardous waste identification, storage, transportation, and spill control. Fort Bliss is categorized as a Large Quantity Generator of hazardous waste as defined by 44 CFR Parts 262 and 264 and is permitted by Texas Commission on Environmental Quality to operate as a Hazardous Waste Storage Facility (permit #50296). The permit allows Fort Bliss to store hazardous waste at the Hazardous Waste Storage Facility for up to 1 year.

Training exercises and testing activities at Fort Bliss expend a variety of ordnance. The Fort Bliss explosives ordnance disposal (EOD) unit eliminates explosives hazards on ranges by detonation in place, or, if safe to do so, by removing the hazard to the EOD range and detonating there. Other items of special concern include medical and bio-hazardous waste, radioactive waste, asbestos, LBP, pesticides, PCBs, and petroleum storage tanks. Programs used to manage hazardous waste and materials at Fort Bliss include their installation Restoration Program, Military Munitions Response Program, Compliance-Related Cleanup, and Pollution Prevention.

4.2.12.2 Environmental Consequences

No Action Alternative and Alternatives 1 and 2

Minor impacts are anticipated for all alternatives. Waste collection, storage, and disposal processes would remain mostly unchanged, and current waste management programs would continue, including the installations current efforts to pursue a reduction in its waste streams as part of the Net Zero initiative. As the number of Solders increase, the installation can anticipate an increase in the use of hazardous chemicals in the cantonment and training and range areas.

Demolition, renovation, and construction would mostly likely result in an increase in the generation of asbestos, lead-contaminated wastes, and other hazardous waste, as well as in increase in the use of pesticides due to the addition of Family housing and other facilities. Waste management plans may need to be updated to incorporate the increases in mission activities associated with all of the alternatives.

4.2.13 Traffic and Transportation

4.2.13.1 Affected Environment

The ROI for traffic and transportation includes Fort Bliss, and the City and County of El Paso, Texas. Major road routes in the area include I-10, Spur 601, and U.S. Route 54. I-10 is an east-west interstate highway, which passes about a mile from the cantonment area, and through the City of El Paso. Spur 601 provides divided highway access to the south side of Biggs and to the future Beaumont Medical Center. U.S. Route 54 leads from El Paso to points north. Montana Avenue is a major thoroughfare that leads from El Paso to Fort Bliss access control points (ACPs). With recent growth in the military and civilian populations at Fort Bliss, the LOS of access routes has decreased.

4.2.13.2 Environmental Consequences

No Action Alternative

Significant but mitigable impacts are anticipated under the No Action Alternative. Surveys and studies conducted on the existing Fort Bliss transportation systems have determined that traffic intersection improvements are needed to improve access route congestion. Recommendations to improve on and off-post traffic systems have been made. LOS on roads accessing the installation may continue to deteriorate with increased regional growth.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have beneficial traffic impacts resulting from a reduction in force at Fort Bliss. It is anticipated that levels of service and traffic congestion would improve. Travel time to and from post would decrease marginally. The roads would continue to be maintained and LOS for on and off-post commuters would improve as traffic volume decreased on routes such as Montana Avenue.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be significant but mitigable short- and long-term impacts on traffic and transportation systems on the installation due to the presence of an additional 3,000 Soldiers. The increase in off-post traffic would have a moderate adverse impact on traffic in the community overall and could contribute to a decrease in the LOS of the road networks and major routes leading to the installation, particularly during peak morning and afternoon travel periods. Presently, the Texas Department of Transportation is seeking funding, planning, and performing preliminary outreach on improving and expanding many area byways, including those in areas experiencing heavy growth, such as the Montana, Highway 375 and Highway 601 area. These projects would be designed to bring the LOS on these roads to at least C or better. The increase in population would also have a moderate adverse impact on the traffic volume on the installation, and could cause a minor decrease in LOS on some of the installation's arterial routes. The increased traffic volume in both the neighboring community and on the installation could pose an increased level of risk to the safety of pedestrians and bicyclists.

4.2.14 Cumulative Effects

Region of Influence

The ROI for this cumulative impact analysis of Army 2020 realignment at Fort Bliss encompasses three counties in the states of Texas and New Mexico. El Paso, Texas and Las Cruces and Alamogordo, New Mexico are the largest cities within the ROI. El Paso is the center for commercial manufacturing, transportation, and medical activities in the ROI area while Las Cruces and Alamogordo are centers of education and are communities which support White Sands Missile Range and Holloman Air Force Base. Fort Bliss has long been a key component of the economy of the metropolitan area, employing several thousand Soldiers and civilians within the ROI.

There are numerous planned or proposed actions within the ROI that have the potential to cumulatively add impacts to Army Force 2020 alternatives. These actions are either in progress or could reasonably be initiated within the next 5 years. A number of the Army's proposed projects have been previously identified in the installation's Real Property Master Planning Board and are programmed for future execution. A list of projects below presents projects which may add to the cumulative impacts for implementation of Army 2020 realignment alternatives.

Fort Bliss Projects

Due to BRAC, Army Transformation, and other initiatives, Fort Bliss has, in the past 5 years, gained four BCTs, a Fires Brigade, an aviation brigade, and various support units. In turn, Fort Bliss has lost an Air Defense Brigade and the air defense school to Fort Sill. These stationing changes in recent years have resulted in a net gain of population at Fort Bliss of about 24,000 Soldiers, resulting in a total of about 35,000 Soldiers[2] on the installation. In the future, the U.S. Air Force 204th Security Squadron is anticipated to establish a regional training facility at Fort Bliss. This facility will have a permanent stationing of 240 personnel and would train about 520 airmen students per month. All of these temporary student personnel will be housed in existing on-post facilities. The squadron has a current airport security facility on the post and, most of the permanent personnel are already assigned.

Within the next 3 years, the following projects are planned for construction on Fort Bliss:

- Multi-purpose machine gun range;
- Air traffic control tower;
- Construction of a veterans clinic;
- Construction of a complex for the Grey Eagle UAS;
- A warehouse to support supply activities;
- Doña Ana North Water Well; and
- Completion of the William Beaumont Medical Center replacement hospital.

Additionally, the RCI program and the Public-Private Capital Venture Program will continue to produce housing for Soldiers on post. Some other projects Fort Bliss will be engaged in include the implementation of energy, water, and waste sustainability initiatives, also known as "Net Zero". These initiatives should help increase the installation's use of energy from renewable sources, reducing greenhouse gas (GHG) emissions, and also reduce the amount of water the installation requires to support its operations. Regionally, these Net Zero initiatives should have

[2] The final FY 2011 Active Duty population of Fort Bliss was approximately 32,350 Soldiers; however, additional Soldiers have been stationing at Fort Bliss in FY 2012 and this number also includes other service members as well.

beneficial environmental impacts which are being documented in an EIS currently in progress and scheduled for completion in early 2013.

Other Actions

Other known planned or ongoing projects and activities that will cumulatively affect the ROI, and especially the Fort Bliss environs, include Texas Department of Transportation projects providing expansion of the I-10 and Highway 375 interchange; the widening of Montana Avenue and Highway 82; and a toll way from Highway 375 that proceeds through the Anthony Gap and connects to I-10, bypassing the congested downtown El Paso business district. These transportation projects will reduce traffic congestion and delays and increase economic activity within the ROI.

EPEC is planning several major projects that will have cumulative impacts. These include two natural gas power generating plants and the infrastructure/transmission lines associated with these facilities. Other transmission lines are planned that would pass through the El Paso area, conveying power generated from renewable sources to markets elsewhere. These proposed projects include the Sun-Zia, Southline, and Cielo Wind transmission lines from east of El Paso to areas to the west. Additionally, other programs, plans, and initiatives that are on the horizon are:

- Smart Growth Plan for the Northeast, a proposed 6,750 acre development between U.S. Highway 54 and the New Mexico State line, and in proximity to the western border of the South Training Areas, will include mixed commercial/industrial-residential uses. Due to the current economic downturn, definitive dates for the development are pending.
- The City of El Paso, with assistance from the DoD Office of Economic Adjustment, is developing a Regional Growth Management Plan under a collaborative planning effort with the City of El Paso, El Paso County, Fort Bliss, and City of Las Cruces and Doña Ana County. The Regional Growth Management Plan indicates that by 2025, the City of El Paso's current land base of 161,000 acres with development on 50 percent of the land, is anticipated to increase to 171,000 acres with development of 63 percent of the land. The Regional Growth Management Plan is targeting the development of selected buffer areas adjacent to Fort Bliss where development and uses currently and/or potentially could conflict.
- Doña Ana County's current planning effort, entitled *Vision 2040*, is a guide for future land use planning through 2040 and beyond, which will include comprehensive plan updates for Doña Ana County. Between 2000 and 2040, the County population is anticipated to grow by 77 percent, with the primary growth areas located in the southern sector of the county, including Sunland Park, Mesilla, and Anthony. One of the policy strategies of *Vision 2040* is to share the Comprehensive Plan with the U.S. DoD to ensure that all parties have access to information as planning decisions occur.
- In 2006, Otero County initiated the development of a Community Economic Action Plan to address infrastructure and growth in Chaparral. Located between the Northeast planning area of El Paso and the Doña Ana Training Range of Fort Bliss, Chaparral is divided by Otero and Doña Ana counties. Both counties are participating in the planning effort.

A range of cumulative effects is anticipated resulting from the implementation of either action alternatives. Due to the aforementioned Army and local government planning initiatives and forecasted growth, changes in the ROI population created by either action alternative are not anticipated to be significant. Further discussion of the cumulative impacts for each alternative is presented below.

No Action Alternative

Under the No Action Alternative, minor changes in military authorizations would be projected to result at Fort Bliss in conjunction with the 204th Air Force Security Squadron stationing. Current planning for infrastructure and RCI housing developments to accommodate all BRAC and Grow the Army initiatives would continue. The Army would continue to implement some facilities reductions of outdated/unused facilities and construct new as required. Under the No Action Alternative, cumulative impacts would not be anticipated to be more than minor for all VECs.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Cumulative impacts as a result of the implementation of Alternative 1 range from beneficial to minor adverse impacts. The following VEC areas are anticipated to experience either no impact or beneficial impact as a result of the implementation of Alternative 1: air quality, land use, airspace, cultural resources, noise, soil erosion, biological resources, wetlands, water resources, energy demand and generation, and transportation.

As a result of Alternative 1, the Army anticipates minor adverse cumulative impacts to socioeconomics and facilities. There would be a decrease in the frequency of garrison support activities and, therefore, a decrease in the number of required civilian and contractor support personnel. Some of the socioeconomic impacts to the region would be offset by transportation and energy projects, as well as the stationing of the U.S. Air Force security squadron at Fort Bliss. When viewed in conjunction with other past, present and reasonably foreseeable projects, the overall cumulative effects of Alternative 1 are projected to be no more than minor adverse impacts.

Socioeconomics and Facilities. In addition to the impacts described in Section 4.2.9.2, the cumulative socioeconomic impact within the ROI under Alternative 1 would be a less than significant adverse impact on the regional economy. Presently, as a result of BRAC and Grow the Army, planning, construction, and infrastructure development has occurred for an estimated 35,000 to 50,000 Soldiers. Reduction of 8,000 Soldiers would affect this planning and may result in some unused facilities or cancellation of some construction projects. However, facilities have already been constructed or refurbished, the economic impacts of future project cancellations would have a minor economic impact.

Nationally, unemployment has been trending lower since 2010. In April 2010, the national unemployment rate was 9.9 percent and as of October 2012 it was reported as 7.8 percent (Bureau of Labor Statistics, 2012). Regionally, off-post unemployment has risen from 6.2 percent to 8.8 percent within the ROI from 2008 to 2012. Alternative 1 would add to the regional unemployment rate but would be partially off-set by other projects in the ROI. The loss of 8,000 Soldiers in conjunction with other reasonably foreseeable proposals would, therefore, have a minor adverse impact on employment.

Air Quality. The reduction of 8,000 Soldiers and Army civilians on Fort Bliss would result in less training on the ranges and; therefore, in a reduction in dust generation and fossil fuel consumption, both of which would incrementally benefit air quality.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Cumulative impacts of increasing stationing at Fort Bliss by 3,000 Soldiers are projected to have minor beneficial impacts to socioeconomic conditions. The following VEC areas are anticipated to experience either no impact or minor cumulative impact as a result of the implementation of Alternative 2: land use, airspace, cultural resources, noise, soil erosion, biological resources, wetlands, and energy demand and generation.

Impacts to the following VEC areas are anticipated to be more than minor in nature. These VECs are presented in additional detail below and include air quality and transportation.

Air Quality. An additional 3,000 Soldiers stationed at Fort Bliss would be equivalent of another BCT for air impacts. Additional maneuver units from BCT restructuring would add to cumulative air quality impacts and would increase fugitive dust emissions as a result of increased training and military vehicle travel. However, almost all training occurs at the ranges in New Mexico or in areas in attainment for air quality, sparsely populated, relatively open, and where dust emissions are readily dispersed. The *Fort Bliss Army Growth and Force Structure Realignment EIS* (U.S. Army, 2010) analyzed the impacts of six maneuver BCTs and determined that air quality cumulative impacts would not result in loss of NAAQS attainment in the ROI. Since Alternative 2 would potentially bring the number of BCTs to five or one less than capacity, the analysis conducted for the EIS indicates that less than significant cumulative air impacts are anticipated within the ROI as a result of Alternative 2 and that the ROI would remain in NAAQS attainment.

Within El Paso County, additional vehicular and operational emissions from the implementation of Alternative 2, in conjunction with the anticipated projects outlined previously are not anticipated to result in significant cumulative impacts. Air quality within the county would be adversely affected by an increase in O_3, particulate matter (PM), and fugitive dust. However, these increases are not anticipated to significantly affect attainment in these standards throughout the airshed; and the region would be projected to remain in attainment for these criteria air pollutants (CAPs).

Traffic and Transportation. Increased stationing and training would result in increased usage of public roads to transport military vehicles and equipment in and around the ROI. The cumulative effects from Alternative 2 taken together with all the previous stationing and planned actions would be considered significant; however, cumulative impacts associated with selection of Alternative 2 are in accord with the 2035 Trans-Border Metropolitan Transportation Plan. This plan takes into account the growth of Fort Bliss as described in previous NEPA analyses. These impacts are mitigable through road construction and traffic management, much of which is already being conducted as previously discussed. For example, completion of Spur 601 eliminated the need for travel along Montana Avenue to access the Fort Bliss Cantonment Area. It is assumed that up to 90 percent of the traffic currently using Montana Avenue would eventually use Spur 601, and that traffic on many of Montana Avenue's road segments would improve to acceptable levels of service.

Military convoys to and from the training areas via public roads would increase as a result of Alternative 2. These include heavy equipment transporters that tend to slow overall traffic speed and reduce the LOS especially on two-lane roads because they limit passing opportunities. However, an extensive project to harden and stabilize the Main Supply Routes or range roads has recently been completed and has reduced the potential effects of convoy traffic to less than significant.

4.3 FORT BRAGG, NORTH CAROLINA

4.3.1 Introduction

Fort Bragg, located in south-central North Carolina has approximately 161,000 acres of range and training maneuver area suited for firing ranges and training areas as well as approximately 33,000 acres used non-maneuver impact areas (Figure 4.3-1). There are several "drop zones" that are used exclusively for airborne Soldier and equipment parachute training. These areas allow Fort Bragg's units to execute rapid airborne insertions and remain qualified to conduct parachute jumps with their equipment from fixed and rotary wing aircraft.

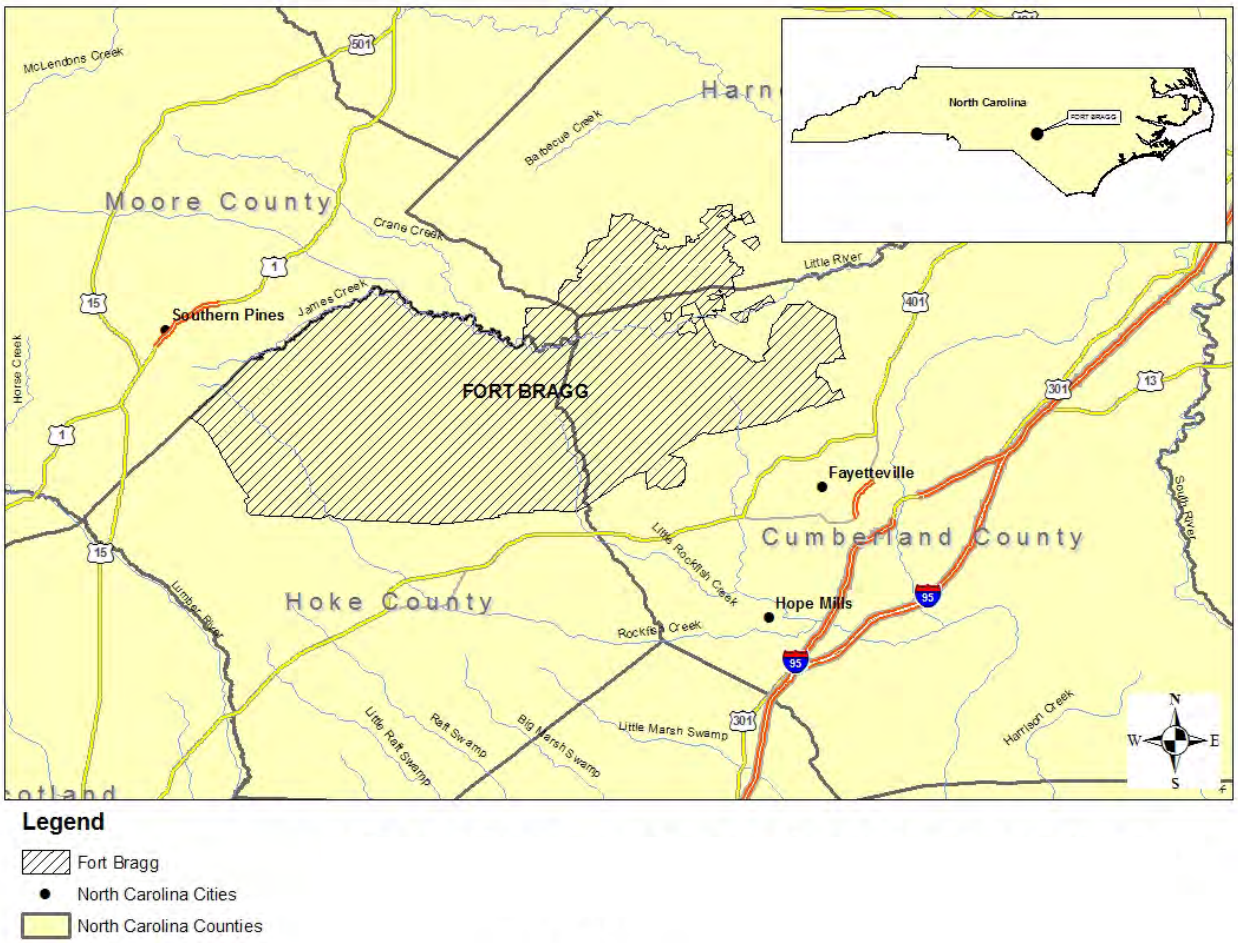

Figure 4.3-1. Fort Bragg

Fort Bragg's major unit is the XVIII Airborne Corps and its primary subordinate unit, the 82nd Airborne Division. The Special Operations Command (Joint and Army) also has schools, units and training facilities on Fort Bragg.

4.3.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Bragg does not anticipate any significant adverse impacts as a result of Alternative 1 (Force reduction of up to 8,000 Soldiers and Army Civilians) other than to socioeconomics. While the Army does not predict significant impacts to income, employment or sales volume within the ROI, a significant impact is anticipated to the population as a result of the implementation of

Alternative 1. The installation is not being considered for growth as a result of the implementation of Alternative 2, as there is currently a lack of facilities and facilities space to accommodate additional Soldiers. Table 4.3-1 summarizes the anticipated impacts to VECs from the No Action and Alternative 1.

Table 4.3-1. Fort Bragg Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 8,000
Air Quality	Minor	Beneficial
Airspace	Minor	Minor
Cultural Resources	Negligible	Minor
Noise	Minor	Beneficial
Soil Erosion	Significant but Mitigable	Beneficial
Biological Resources	Negligible	Beneficial
Wetlands	Minor	Beneficial
Water Resources	Negligible	Beneficial
Facilities	Negligible	Beneficial
Socioeconomics	Minor	Significant
Energy Demand and Generation	Minor	Minor
Land Use Conflict and Compatibility	Minor	Minor
Hazardous Materials and Hazardous Waste	Negligible	Minor
Traffic and Transportation	Significant but Mitigable	Beneficial

4.3.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section below, no more than a beneficial or negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- ***Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species).*** Fort Bragg supports a large diversity of natural resources and, therefore, falls under jurisdiction of the Sikes Act. Its diversity of habitats provides the necessary resources for a variety of fish, wildlife and plant species. Wildlife species, both common and endangered, are important for present and future military missions at the installation. In general, the health (i.e., population viability) of fish and wildlife populations is an indicator of a healthy ecosystem. A high quality aquatic, faunal and floral component equates to a high quality training environment. For both the short term and long term, it is in interest of the Army to continue supporting a sustainable environment and natural resources to sustain a military readiness training environment.

Various biological inventories indicate there are 194 birds, 20 mammals, 48 reptiles, 37 amphibians, and 49 fish species found on Fort Bragg. An additional 111 vertebrate species are suspected to live or migrate through the installation (U.S. Army, 2011). Since the military mission, military readiness training and natural resource management actions affect fish and wildlife habitat, activities, programs have been designed and integrated to create and enhance habitat that are consistent with the installation's military mission (U.S. Army, 2011).

Throughout this ecosystem on Fort Bragg a variety of natural plant community types can be found. Overall, there are total of 36 natural plant communities and variants, consisting of 23 different vegetative communities, identified on Fort Bragg and Camp Mackall, which are described in Appendix 5.7.4 of the Fort Bragg INRMP.

Negligible adverse effects would occur at Fort Bragg under the No Action Alternative. The threatened and endangered species recorded on the installation are managed in accordance with the installation's INRMP and Endangered Species Management Plan (ESMP), terms and conditions identified within Biological Opinion(s) issued by the USFWS, and any conservation measures identified in ESA, Section 7 consultation documents. Fort Bragg would continue to adhere to its existing resource management plans and to further minimize and monitor any potential effects.

Units are briefed prior to each training event regarding sensitive areas on post, such as protected species habitat, and what is and is not allowed within certain areas, such as within the protective buffer surrounding individual RCW cavity trees. Range capabilities and timber management activities on Fort Bragg are ongoing and would continue as a result of the implementation of Alternative 1, as planned in the installation's timber harvest priority list. Most prescribed harvest activities are thinnings carried out to support troop training, endangered species management, and forest health.

Beneficial impacts to biological resources as a result of the implementation of Alternative 1 are anticipated. Scheduling conflicts for training area access to conduct resource monitoring would be reduced. Proactive conservation management practices (e.g., application of prescribed fire, restoration of longleaf pine-wiregrass ecosystems) would be more easily accomplished with reduced mission throughput. Force reduction should reduce construction pressures resulting in forest fragmentation and removal of potential threatened or endangered species habitat; therefore, minimizing the risk of violating conditions of previous Biological Opinions. A reduction of up to 8,000 personnel should not affect long-term species recovery.

- ***Water Resources.***

Water Supply. The potable water system at Fort Bragg consists of commodity or supply and distribution. The potable water system is privatized and the City of Fayetteville and Harnett County are jointly responsible for providing water supply to Fort Bragg. Additionally, as of March 1, 2008, the water distribution system at Fort Bragg and Pope Air Force Base was privatized.

The City of Fayetteville and Harnett County each fulfill half the usage requirement and provide 6 to 16 mgd of potable and fire water. Each supplier is capable of providing all of Fort Bragg's water needs should the other supplier incur a problem.

The existing water distribution system is divided into high and low pressure zones, Fort Bragg generally complies with TM 5-813-5 to deliver both peak domestic and fire flows. Some sprinkler systems have pressures below those recommended by TM 5-813-5; however, they are individually designed to operate successfully at lower pressures. The private utility contractor is responsible for upgrading the entire distribution system since there are isolated areas of low pressure, limited fire flow, or is

not completely looped; and provide for adequate distribution and pressure for current and future development.

Wastewater. The wastewater system is comprised of commodity and service, and collection services. The wastewater system has undergone privatization. As per a recent 40 year wastewater commodity contract, Harnett County is responsible for providing wastewater services for Fort Bragg. The private utility contractor has a 50 year contract to own, operate, and maintain the wastewater collection system at Fort Bragg. While Fort Bragg still maintains the permit to operate the Fort Bragg WWTP, the wastewater commodity service purchase process is anticipated to be complete by December 2012.

Portable toilets and individual septic tanks serve firing ranges, drop zones, bivouac grounds, outlying permanent structures, and other outlying areas. Portable toilets are located as needed to serve training requirements, and are pumped into the cantonment's sewer system for treatment. In addition, there are areas at Fort Bragg that generate industrial wastewater. These include the fabrication shops, repair shops, overhaul shops, depot facilities, printing shops, food services, and medical services. Currently, industrial wastewater is discharged to the sanitary sewer system. Vehicle maintenance and refueling areas are equipped with oil and water separators, which was the only means used to pre-treat industrial wastewater. While the on-base treatment facilities were capable of adequately treating industrial wastewater with respect to NPDES permit limits, after the wastewater commodity service purchase process is in effect under privatization, the industrial waste would need to be pre-treated up to the allowed discharge standard before being deposited in the County system.

The current collection system is old and has caused occasional sewage spills and floods. In some areas, 25-inch pipes empty into 14-inch pipes, causing failure under high pressure and flow. Overall, the sanitary sewer collection system provides adequate service, though maintenance and improvements are necessary. While Fort Bragg currently has large sewer mains (gravity and/or force mains) servicing a majority of the areas, the age and condition of the sanitary collection system generally suggests that existing sewers need upgrading. The private utilities contractor would be in charge of upgrading the entire collection system and would provide for future development. There would be adequate wastewater treatment capacity available to accommodate future growth at Fort Bragg.

Fort Bragg also operates a Central Vehicle Wash Facility. Facility management practices have been effective in meeting the conditions of the permit. Additionally, the installation operates the Lamont West Borrow Pit that meets all permit conditions.

The No Action Alternative would have no effects to water resources. The current water supply system has adequate supply, treatment, storage, and distribution to support existing population. The sewage treatment facility is currently capable of handling the wastewater treatment needs of the installation.

Beneficial impacts are anticipated as a result of the implementation of Alternative 1. A loss of up to 8,000 Soldiers and Army civilians would reduce the demand for potable water, and with Alternative 1 would create additional treated wastewater capacity for other uses at the installation. Though depending on where in the distribution system the loss occurs, the installation may need to increase flushing or loop water supply lines to prevent stagnation as a result of nonuse.

- ***Facilities.*** Fort Bragg currently supports a total population of more than 150,000 people. The bulk of the installation's acreage is dedicated to operational areas for field maneuvers, exercises, firing ranges, impact areas, and parachute drop zones. The primary mission is the training of airborne Soldiers. In broad terms, continuing

operations at Fort Bragg include general maintenance and repair, land management, utility systems operation and commercial activities.

Fort Bragg has approximately 6,560 buildings, while Camp Mackall has 59 that require maintenance. Nearly all military maintenance and commercial facilities, supply facilities, operation and training facilities, various community facilities, and Family and Soldier housing areas are located in the cantonment area.

Fort Bragg's current land use pattern is described in detail in the 2010 *Implementation of the Real Property Master Plan Programmatic Environmental Assessment* (Parsons, 2010). Fort Bragg covers a land area that stretches approximately 27 miles from east to west and 16 miles from north to south at its most extreme points. Generally, the installation is divided into three broad categories of land use; cantonment area, green belt, and range and training areas. Fort Bragg's cantonment area is the urbanized portion of the installation, which has been developed into a wide variety of land uses that comprise the elements necessary for a complete community.

The cantonment area is severely constrained and fully developed. Fort Bragg is currently at a deficit of approximately 1.5 million square feet short in company operations facilities and approximately 1 million square feet in vehicle maintenance shop facilities.

Impacts to facilities would be negligible under the No Action Alternative. Fort Bragg's current facility shortfalls have been prioritized for programming and funding by the Army. The installation would continue to implement the Army's FRP for outdated facilities. Environmental analyses of the projects that result from these programs are conducted prior to implementation.

Beneficial impacts are anticipated as a result of the implementation of Alternative 1. An increase in the FRP and facilities demolition at Fort Bragg would occur as a result of Alternative 1. Older, less efficient facilities nearing the end of their life-cycle would be demolished when no longer needed to support Soldiers or their Families to save the Army on maintenance and energy requirements. Facility availability for the remaining population would increase, as some facilities shortfalls could be addressed through the re-purposing of existing facilities to support best uses. Fort Bragg's land use would not change under of this alternative. A decrease of Soldiers at Fort Bragg would decrease the facilities requirements and shortfalls within the cantonment area including associated requirements for schools, housing and Family-use centers, the Post Exchange, commissary, and medical and Family support facilities.

Fort Bragg anticipates that the implementation of any of the alternatives would result in negligible impacts for those VECs discussed above. The following provides a discussion of the VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Proposed Action alternatives.

4.3.2 Air Quality

4.3.2.1 Affected Environment

The project area includes Harnett, Hoke, Moore, Scotland and Cumberland counties, North Carolina. In 2003, Cumberland County, which includes all of Fayetteville and large portions of Fort Bragg, was recommended for nonattainment designation for 8-hour O_3 standards. The State of North Carolina, Cumberland County and the EPA entered into an Early Action Compact to avoid the official "nonattainment" designation. The purpose of the Early Action Compact was to develop and implement an Early Action Plan that will reduce ground-level O_3 concentrations in the Fayetteville MSA to comply with the 8-hour O_3 standard by December 31, 2007. As a result of the Early Action Compact efforts, Cumberland County was designated attainment for

O_3 by the North Carolina Department of Environment and Natural Resources - Division of Air Quality on April 15, 2008. If the MSA is designated as nonattainment, Fort Bragg will have to conduct a conformity review for each action to determine if a general conformity analysis is required.

Fort Bragg is designated as a major source of air pollutants. The major source designation requires Fort Bragg to maintain a Title V Operating Permit. Sources of air pollutants at Fort Bragg include heating plants, incinerators, surface coating equipment and painting operations, engine testing operations, fuel evaporation sources, and land vehicle and aircraft exhaust. Stationary emissions sources are regulated by the facility's Title V Air Quality Operating Permit (#04379T35). In addition to permitted emissions sources, air quality impacts in the form of dust are generated by vehicular movement, helicopter rotor wash, weapons firing, and ordnance impacts on the unpaved areas of the installation. Controlled burns associated with forest management and endangered species programs also generate smoke, which contributes to the generation of PM.

4.3.2.2 Environmental Consequences

No Action Alternative

Fort Bragg anticipates a minor adverse impact to air quality. Fort Bragg would continue to operate under the existing Title V Operating Permit under the No Action Alternative. Any new construction or demolition with the potential for emission sources would be required to be included on the installation's Title V permit. If the MSA is designated as nonattainment after the 2013 standard review by the EPA, any future project beyond that date would need general conformity analysis and revision to the Title V permit would be required.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Fort Bragg anticipates a minor beneficial environmental impact on air quality for the installation and surrounding communities. A decrease in operations and maintenance activities would have a beneficial impact regional air quality. Fort Bragg is categorized as a major source of criteria pollutant emissions. The "major source" designation triggers the provisions of 40 CFR 52.21, PSD. The PSD provisions require Fort Bragg to assess all new emission units to determine if their operation constitutes a major modification. The major source designation also requires Fort Bragg to maintain a Title V Operating Permit.

Air quality should benefit as a result of the implementation of Alternative 1. Force reduction would lead to less fossil fuel combustion and vehicular traffic emissions. Troop level reduction would lead to less operational demands on heating, ventilation, and air conditioning systems; painting operations; volatile organic compound (VOC) emissions from parts washers; and other miscellaneous emission sources associated with troop training and maintenance activities. In addition, the proposed personnel reduction should not affect emission standards for HAPs.

Demolition of facilities may have short-term, minor negative air impacts, but would result in long-term, reduced combustion emissions, also reducing O_3 precursors. It is anticipated that combustion emissions from stationary sources would decrease with the relocation of tenant units into newer facilities and the demolition of older facilities.

4.3.3 Airspace

4.3.3.1 Affected Environment

Fort Bragg uses approximately 1,230 cubed miles of FAA designated SUA, up to 29,000 feet. The installation has access to this airspace continuously, with restrictions, and is controlled by the FAA, Washington, DC (Beaty, 2011).

The mission of the Airfield and Training Divisions of the Directorate of Plans, Training, Mobilization, and Security is to manage installation aviation matters, plan, prepare, operate, and maintain fixed based facilities. The Directorate of Plans, Training, Mobilization, and Security coordinates airspace utilization for DoD and civil aviation operations at Fort Bragg and Camp Mackall in support of tactical and non-tactical operations such as: coordinating Fort Bragg airspace, flight simulation training, air traffic control, aircraft refueling operations, flight planning, flight following services, and aviation weather forecasting (U.S. Army, 2006).

4.3.3.2 Environmental Consequences

No Action Alternative and Alternative 1

Fort Bragg would maintain existing airspace operations under the No Action Alternative. Restricted airspace (R5311) is sufficient to meet current airspace requirements, and a Soldier reduction would not be projected to alter the installations use of aviation assets or airspace. A personnel reduction would not alter the current airspace use.

4.3.4 Cultural Resources

4.3.4.1 Affected Environment

Fort Bragg manages its cultural resources through the Cultural Resources Management Program (CRMP) in accordance with the installation's Integrated Cultural Resources Management Plan (U.S. Army, 2007). The CRMP team is comprised of professional archaeologists, architectural historians and historic preservation specialists. The CRMP team consults with other land use managers such as Range Control, Forestry Branch, Wildlife and Endangered Species branches, Real Property and Engineering offices to coordinate efforts to identify any actions that could cause potential impacts on historic and archaeological resources. Relevant federal legislation including the NHPA, the ARPA, and the NAGPRA and AR 200-1, guide cultural resources management and compliance.

Fort Bragg currently manages 352 historic buildings, structures, and landscapes that are listed or considered eligible for listing in the NHRP. These resources are included in two NRHP-eligible districts (the Old Post Historic District and the John F. Kennedy Special Warfare Center and School Historic District), and 18 individual buildings or structures designated as NRHP-eligible. Three properties are NRHP-listed: Long Street Presbyterian Church; Pope Air Force Base Historic District; and Hangars 4 and 5 on Pope Field. In addition, Fort Bragg has identified and manages 27 historic cemeteries.

To date, a total of more than 6,000 archaeological resources have been identified at Fort Bragg and Camp Mackall. Of this number, approximately 5,500 pre-contact period sites, representing over 10,000 years of American Indian land use in this area, reflect the Paleo-Indian, Archaic, and Woodland cultural periods. These sites represent short-term and long-term hunter-gatherer camps, stone tool production workshops, and general habitation and activity areas.

Approximately 530 historic sites represent post-contact periods of American Indian, European-American, and African-American land use during the 18th to 20th centuries. Such sites include farmsteads, churches, schools, rural industrial complexes (saw, grist and lumber mills, blacksmiths, tar kilns, distilleries), and battlefield sites of the Civil and Revolutionary war periods.

Most of the over 6,000 documented archaeological resources on Fort Bragg, of both pre-contact and post-contact periods, have been determined through previous evaluations as not eligible for listing on NRHP and are no longer managed by the CRMP. Only 128 archaeological sites identified are considered eligible for listing on the NRHP. An additional 39 archaeological sites are presently protected pending evaluation for NRHP eligibility (U.S. Army, 2007).

4.3.4.2 Environmental Consequences

No Action Alternative

Impacts to cultural resources under the No Action Alternative would be negligible. Activities with the potential to affect cultural resources are monitored and regulated through a variety of preventative and minimization measures. Fort Bragg consults with the North Carolina SHPO in accordance with 36 CFR 800 and efforts are employed to avoid, minimize, or reduce impacts to installation cultural resources for all projects at the installation. Fort Bragg would continue to consult with the SHPO under the No Action Alternative.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor impacts are anticipated as a result of the implementation of Alternative 1 at Fort Bragg. Removal of temporary facilities would have a very low potential for adverse effects to historic buildings and/or archeological resources. Removal of outdated infrastructure has the potential to affect historic structures, but such actions to demolish older structures would be conducted in accordance with the current Programmatic Agreement. If the undertaking has the potential to adversely affect historic properties, consultation with the SHPO would occur per 36 CFR 800 as required. There is a low potential for any unique or potentially eligible historic structures to be affected as a result of this action, and if such an action is proposed, full consultation with the SHPO would occur, as required. Fort Bragg would continue to consult with the SHPO when NRHP potentially eligible cultural resources might be impacted.

4.3.5 Noise

4.3.5.1 Affected Environment

There are four major sources of noise at Fort Bragg: vehicles, aircraft, artillery fire and explosions, and small arms firing. Vehicular noise is created by vehicle movement, but sometimes exacerbated by large troop movements in wheeled or tracked vehicles. These noises are dampened by terrain, woodlands, and distance from receptors, such as on-base and off-base residential areas. The impact created by vehicle noise is rarely considered significant. Aircraft noise is generated by fixed- and rotary-wing aircraft from Pope Army Airfield, Simmons Army Airfield, and Mackall Army Airfield. These are intermittent noises that are most intense during takeoff; however, the points of origin are well within the confines of the post. The most noticeable noise levels are associated with low-level flight during takeoff and landing.

Pope Army Airfield and Simmons Army Airfield have greater noise impacts than Mackall Army Airfield due to the density of residential development near the east end of the installation and the greater number of operations. Artillery fire and explosion noise is created by firing large-caliber weapons, such as the 105mm howitzer. Small arms noise results from small arms being fired on the ranges.

The majority of noise complaints received at Fort Bragg fall into two general categories; aircraft and artillery. Aircraft overflights account for a majority of the noise disturbance above the Deerfield residential subdivision, and the northwestern portion of Spring Lake. Artillery live fire is the greater cause of noise disturbance off the installation. A 2008 JLUS, which included Fort Bragg, Pope Army Airfield, nine surrounding counties, and nineteen municipalities, was conducted to help ensure long-term sustainable training on Fort Bragg. This study projected BRAC growth in addition to the transition of Pope Army Airfield Base to the Army. Land use recommendations developed from that study are currently being implemented. Small portions within the study area along the installation boundary and along Harnett, Hoke, and Cumberland counties had an average noise level exceeding 62 decibels (dB) which is considered incompatible with residential development. Additionally, many of the military LFX are conducted

late at night leading to numerous complaints. As with Fort Benning, existing noise does not significantly impact the RCW population, or other threatened and endangered species at Fort Bragg.

4.3.5.2 Environmental Consequences

No Action Alternative

Minor impacts from noise are anticipated under the No Action Alternative. The acoustic environment of Fort Bragg would continue to be affected by small- and large-caliber weaponry, artillery, and aircraft overflight. Other activities, such as ground maneuver training and exercises resulting in noise created by personnel and vehicles, would continue to contribute noise on Fort Bragg, to the same levels and intensity as historically experienced.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Impacts from noise are anticipated to be negligible and slightly beneficial as a result of the implementation of Alternative 1. Existing ranges would still be utilized for firing the same types of weapons systems and conducting the same types of training. Alternative 1, however, would have an anticipated reduction in the frequency of noise generating training events. Fort Bragg's remaining BCTs would continue to conduct maneuver and live-fire training in the field; however, the number of weapons qualifications and maneuver training events could be anticipated to decrease in proportion with the number of Soldiers stationing at the installation. Noise impacts would likely remain comparable to current conditions, though less frequent. A reduction of 8,000 Soldiers would have no impact on the weaponry being utilized on existing ranges and would not be anticipated to change to current noise contours nor change the risk potential for noise complaints. The current frequency and activities of aviation training activities, a contributor of noise at the installation, would not be anticipated to change, as aviation units would not be impacted by these decisions. The installations existing noise contours would not be anticipated to change as a result of the implementation of Alternative 1. Aviation activities generating noise would be anticipated to remain largely unchanged.

4.3.6 Soil Erosion

4.3.6.1 Affected Environment

Fort Bragg is located in the Sandhills physiographic province. The Coastal Plain soils are dominated by the Gilead-Blaney-Lakeland soil mapping unit. The surface of Fort Bragg is predominantly mantled by sandy soils comprised of loose to silty and clayey sands in some subsoils. Most of these soils are well-drained, or even excessively well-drained. Poorly drained soils are primarily limited to floodplains and some high organic terrace deposits.

Each soil type at the installation has particular engineering limitations. These soil types and their limitations are described in the U.S. Geological Service soil surveys for the region. Since most soils in the region are sandy, they also easily erode; therefore, soil conservation is paramount in any area with insufficient ground cover. A combination of vegetative and drainage system maintenance is necessary to prevent or remedy erosion.

4.3.6.2 Environmental Consequences

No Action Alternative

The affected environment of soils in the Sandhills region is highly susceptible to severe soil erosion due to the physical, geological, topographical and chemical nature of these soils. Soil erosion frequency and severity would not be altered under the No Action Alternative and would remain significant but mitigable through the implementation of construction BMPs and the ITAM program to limit soil loss in Fort Bragg's training areas.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Reducing Fort Bragg's Soldiers and civilians by 8,000 as a result of the implementation of Alternative 1 would be projected to lead to a slight beneficial impact. As a result of the implementation of Alternative 1, a slight reduction in training and associated soil compaction and loss of-vegetation would occur. This would in turn be projected to result in less sediment discharge into the state's waters. Continued compliance with NPDES stormwater permits would ensure present and future construction actions properly manage surface water resource impacts and sedimentation issues.

4.3.7 Wetlands

4.3.7.1 Affected Environment

Fort Bragg contains approximately 10,900 acres of potential wetlands (U.S. Army, 2011). Palustrine wetlands have unique and important biological functions. They provide critical habitat for many wildlife species, absorb and abate floodwaters, improve water quality by removing pollutants, represent important wildlife travel corridors, enhance aesthetics, and provide recreational, scientific, and educational values. Wetlands are important in several natural processes, including groundwater discharge and recharge, flood flow attenuation, sediment stabilization, nutrient removal or transformation, stormwater abatement, and as fish and wildlife habitat.

Any disturbance to the soil or substrate (bottom material) of a wetland or waterbody, including a stream bed, is an impact and may adversely affect the hydrology of an area. Activities involving the discharge of dredged or fill material into jurisdictional wetlands and open waters are regulated under Section 404 of the CWA. Discharges of fill material generally include, without limitation: placement of fill material that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; dams and dikes; artificial islands; property protection or reclamation devices such as riprap, groins, seawalls, breakwaters, and revetments; beach nourishment; levees; fill for intake and outfall pipes and sub-aqueous utility lines; fill associated with the creation of ponds; and any other work involving the discharge of fill or dredged material. A USACE permit is required whether the work is permanent or temporary.

4.3.7.2 Environmental Consequences

No Action Alternative

The No Action Alternative would have a minor adverse effect to wetland on Fort Bragg resulting from the impacts of continued training. Wetlands impacts from projects already under construction (or for which NEPA is complete and construction pending) have been assessed and, if required, appropriate mitigation and permitting have occurred. Additionally, training, personnel operations, and routine maintenance and monitoring activities on Fort Bragg would occur, resulting in minimal impacts to wetlands. These are minimized by BMPs and regular maintenance of roads, ranges, training lands, and developed areas, although traffic through wetlands is avoided and activities in wetland restoration areas monitored to ensure restoration is not compromised. All soil-disturbing activities are reviewed by subject matter experts to ensure avoidance or minimization of wetlands impacts in accordance with USACE Section 404 permit requirements. Wetland impacts would continue to be reviewed and managed in this fashion under the No Action Alternative.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Beneficial impacts to wetlands as a result of the implementation of Alternative 1 are anticipated. A reduction in force at Fort Bragg would mean tank roads, ranges, and training areas would be less utilized. Less vegetation would be denuded and less sediment would run off into wetlands to impair their ecological function. As such, the loss or degradation of wetland systems would occur less frequently or to a decreased extent. All soil-disturbing activities to include potential facilities demolition, would be reviewed by subject matter experts to ensure avoidance or minimization of wetlands impacts in accordance with USACE Section 404 permit requirements. Wetland impacts would continue to be reviewed and managed in this fashion as a result of this alternative.

4.3.8 Socioeconomics

4.3.8.1 Affected Environment

The ROI consists of Cumberland, Hoke, Harnett, and Moore counties. Fort Bragg's population and workforce have long been an essential element of the demography and economy of Cumberland, Hoke, and Harnett counties. The area around the satellite training area of Camp Mackall also includes Moore, Scotland, and Richmond counties. Of these counties, Moore County is included in the ROI because a substantial number of Fort Bragg employees live within the county.

Population and Demographics. The Fort Bragg population is measured in three different ways. The daily working population is 54,892, and consists of full-time Soldiers and Army civilian employees working on post. The population that lives on Fort Bragg consists of 20,924 Soldiers and an estimated 23,723 dependents, for a total on-post resident population of 44,297. Finally, the portion of the ROI population related to Fort Bragg is 80,769 and consists of Soldiers, civilian employees, and their dependents living off post.

The ROI county population is 570,000. Compared to 2000, the ROI's 2010 population increased in Cumberland, Hoke, Harnett, and Moore counties (Table 4.3-2). The racial and ethnic composition of the ROI is presented in Table 4.3-3.

Table 4.3-2. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Cumberland	320,000	+ 5.4
Hoke	45,000	+ 39.5
Harnett	115,000	+ 25.8
Moore	90,000	+ 18.0

Table 4.3-3. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
North Carolina	65	21	2	8	1	2	0
Cumberland	47	36	1	9	2	4	1

Table 4.3-3. Racial and Ethnic Composition (Continued)

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Hoke	41	33	9	12	1	3	0
Harnett	64	21	1	11	1	2	0
Moore	78	13	1	6	1	1	0

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased in Cumberland, Hoke, and Moore counties, and decreased in Harnett County and overall in the State of North Carolina (Table 4.3-4). Employment, median home value, household income, and poverty are presented in Table 4.3-4.

Table 4.3-4. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
North Carolina	3,353,931	- 0.90	143,700	43,754	16.20
Cumberland	91,510	+ 2.70	110,300	41,163	17.00
Hoke	5,259	+ 11.30	108,600	40,838	21.30
Harnett	18,881	- 9.20	118,500	42,792	17.30
Moore	27,815	+ 4.10	170,700	45,987	13.30

Approximately 14,605 Soldiers were living in barracks in FY 2010. Currently, 177 barracks are reserved for unaccompanied personnel, and 14 are reserved for students (Gioia, 2012). There are two, three and four-bedroom multi-family buildings; single homes; and duplexes in nine communities on Fort Bragg. Picerne Military Housing manages these 6,550 housing units, 6,319 Family quarters units, and 250 leased units in Hoke County. There are 31 General Officer's quarters, and 129 quarters provided for Colonels and Lieutenant Colonels on post. Fort Bragg also provides 813 lodging units for on-post transient lodging within 18 buildings (Locklear, 2012). Some of these buildings and units are currently diverted for Special Operations Command students; therefore, the current available lodging unit total is 540 (USACE, 2012).

Schools. There are ten schools located on Fort Bragg with an estimated enrollment of 4,744 students grades pre-school through nine. Students in grades 10-12, whose parents reside at Fort Bragg, are assigned to attend E.E. Smith High School in Fayetteville, NC (Cumberland County School). Total enrollment, military connected enrollment, Federal School Aid, and DoD funding for the 2010-2011 and 2011-2012 school years are depicted in Table 4.3-5. Federal Impact Aid reported is 2 years in arrears; therefore, the Federal School Impact Aid for 2010-2011 and 2011-2012 reported in Table 4.3-5 does not correspond to the enrollment reported for those school years. Additionally, the Federal School Impact Aid reported in Table 4.3-5 does not singularly pertain to Active Duty military, but rather is a conglomerate of all federally-associated entities including civilians working on federal property, Active Duty military, individuals residing in low rent housing, etc.

Table 4.3-5. School Enrollment, Impact Aid, and DoD Funding

	Enrollment (Students)		Military Connected (Students)		Impact Aid (Dollars)		DoD Funding (Dollars)	
County	**2010 - 2011**	**2011 - 2012**	**2010 - 2011**	**2011 - 2012**	**2010 - 2011[1]**	**2011 - 2012[1]**	**2010 - 2011**	**2011 - 2012**
Cumberland	52,401	51,803	12,170	11,639	5,715,374	7,232,661	1,178,861	1,196,561
Harnett	19,486	19,555	2,455	2,671	436,313	679,377	Unable to obtain	Unable to obtain
Hoke	7,882	8,102	1,813	1,783	431,579	471,048	121,414.33	138,128
Moore	12,491	12,466	1,373	1,412	87,559	117,000	185,000	Unable to obtain

[1.] Please note that Federal School Impact Aid funds are usually two years, arrears; therefore, these figures are not reflective of the current year's enrollment. Also, Federal School Impact Aid is received for a number of federally associated entities; e.g., Active Duty military, civilians working on federal property, individuals residing in low rent housing areas, etc.

Public Health and Safety. Directorate of Emergency Services includes the Provost Marshal Office, Fire Department, and Intelligence and Security Office. The Fire and Emergency Services Division provides fire protection and prevention services to Fort Bragg's Soldiers, their Families, and civilian work force. Womack Army Medical Clinic is one of largest clinical departments and integrated Primary Care systems in the DoD, and operates the largest Graduate Medical Education program in the Army. Active Duty personnel, retirees, and their dependents are provided Primary Care at Womack, or its seven outlying clinics. Two of these clinics are located off-post in the surrounding communities of Hope Mills and Fayetteville.

Family Support Services. The Fort Bragg FMWR provides facilities and care for children 6 weeks to 5 years, School Age Care for ages 6-10 years, and middle school and teen programs for ages 11-18 years. As of FY 2012, 13,277 Families have registered for services, 8,080 children for specific child care and child and youth passes, and 6,754 children have been enrolled in sports and SKIES programs. Of those Families, 7,871 live on post and 5,365 reside off post. Additionally, 454 of those enrolled are DoD civilians, 88 are DoD contractors, and 438 are retired military.

Recreation Facilities. The Fort Bragg MWR oversees Child, Youth, and School Services; auto skills, frame, design and wood shop; library; physical fitness centers; clay target center; three bowling centers; two 18-hole golf courses; indoor and outdoor swimming pools; ice rink and in-line outdoor skating rink; Army Travel Camp; recreational camp and beach activities area; mountain bike trails and ski Rixen; and food and beverage facilities to include McKellar's Lodge, Fort Bragg Club, Iron Mike's Brew Pub, Green Beret Club, Sports USA, and Bingo.

4.3.8.2 Environmental Consequences

No Action Alternative

The No Action Alternative would result in minor impacts to existing socioeconomic resources. Fort Bragg's continuing operations represent a beneficial source of regional economic activity. The demand for public services and local school spaces by the dependents of Soldiers living off post would continue at current levels. No additional impacts to housing, public and social services, public schools, public safety, or recreational activities are anticipated.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of up to 8,000 military employees (Soldier and Army civilian employees), each with an average annual income of $41,830. In addition, this alternative would affect an estimated 4,464 spouses and 7,680 dependent

children, for a total estimated potential impact to 12,144 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 20,144.

Based on the EIFS analysis, there would be significant socioeconomic impacts for population in the ROI for this alternative. There would be no significant impacts for sales volume, employment, or income. The range of values that represents a significant economic impact in accordance with the EIFS model are presented in Table 4.3-6, along with the predicted percentages for Alternative 1. Table 4.3-7 presents the estimated economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.3-6. Economic Impact Forecast System and Rational Threshold Value Summary

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	12.36	9.14	6.62	2.36
Economic Contraction Significance Value	- 6.8	- 5.96	- 7.5	- 0.7
Forecast Value	- 4.09	- 3.13	- 5.34	- 3.53

Table 4.3-7. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- $448,370,800	- $390,474,200	- 8,943 (Direct) - 1,641 (Indirect) -10,584 (Total)	- 20,144
Percent	- 4.09 (Annual Sales)	- 3.13	- 5.34	- 3.53

The total annual loss in sales volume from direct and indirect sales reductions in the ROI would represent an estimated -4.09 percent reduction. State tax revenues would decrease by approximately $21.29 million as a result of decreased sales. Some counties within the ROI supplement the state sales tax of 4.75 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by an estimated 3.13 percent. While 8,000 direct Soldier and Army civilian positions would be lost within the ROI, EIFS estimates another 943 military contract service jobs would be lost as a direct result of the implementation of Alternative 1, and an additional 1,641 job losses would indirectly occur as a result of a reduction in demand for goods and services in the ROI. The total reduction in demand for goods and services within the ROI is projected to lead to a loss of 10,584 non-farm jobs, or a -5.34 percent change in regional employment. The total number of employed non-farm positions in the ROI is estimated to be 198,357. A significant population reduction of -3.53 percent within the ROI is anticipated as a result of this alternative. Of the approximately 570,000 people (including those residing on Fort Bragg) that live within the ROI, 20,144 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in the demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes Army civilian and military members and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be

counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.3-8 shows the total projected economic impacts, based on the RECONS model (see Section 4.0.4), that would occur as a result of the implementation of Alternative 1.

Table 4.3-8. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- $274,958,832 (Local) - $519,989,748 (State)	- $370,596,376	- 8,605 (Direct) - 751 (Indirect) - 9,357 (Total)
Percent	- 2.56 (Total Regional)	- 2.97	- 4.71

The total annual loss in direct and indirect sales in the region represents an estimated -2.56 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 1.53 percentage points less than estimated by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, state tax revenues would decrease by approximately $24.7 million as a result of the loss in revenue from sales reductions, which is $3.41 million more in lost state sales tax revenue that projected by the EIFS model. Regional income is projected by RECONS to decrease by 2.97 percent, which is slightly less than the 3.13 percent reduction projected by EIFS. While 8,000 direct Soldier and Army civilian positions would be lost within the ROI, RECONS estimates another 605 direct contract and service jobs would be lost, and an additional 751 job losses would occur indirectly from a reduction in demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 9,357 jobs (as compared to 10,584 jobs under EIFS), or a -4.71 percent change in regional non-farm employment (as compared to -5.34 percent under EIFS). When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 1 would lead to a net reduction of economic activity within the ROI of roughly the same magnitude.

Schools. A reduction of 8,000 Soldiers and Army civilians would result in a beneficial impact to regional schools. The majority of the analysis conducted by the Fort Bragg Regional Alliance focused on adverse impacts to regional schools due to the substantial growth of military personnel and their Families in the last 5 years at Fort Bragg. Most of this growth occurred in Harnett and Hoke counties. Therefore, it would be anticipated that a reduction of 8,000 Soldiers and Army civilian school-age dependents would result in a beneficial impact, as schools may become less crowded with a net decrease in student to teacher ratios in surrounding communities.

Public Health and Safety. Law enforcement, medical care provider, and fire and emergency service provider demands would potentially be decreased due to a reduction of military employees. Fort Bragg anticipates less than significant impacts to public health and safety under the Proposed Action.

Family Support Services. A reduction in demand for on- and off-post Family support services could potentially occur due to implementing Alternative 1. Fort Bragg anticipates less than significant impacts to Family support services under the Proposed Action.

Recreation Facilities. Implementation of Alternative 1 could potentially decrease recreational facility use on post. Fort Bragg anticipates less than significant impacts to recreation facilities due to the Proposed Action.

Environmental Justice. The ROI's Caucasian, African American, Native American, and Hispanic population differs from the state population; the Asian population in the ROI is nearly identical to the state population. Moore County is 78 percent Caucasian compared to 65 percent of the state as a whole. The poverty level of the ROI also differs from the state as a whole 21.33 percent of the Hoke County population is below the poverty level compared to 16.22 percent of the state as a whole. Fort Bragg anticipates less than significant impacts to children, economically disadvantaged populations, or minorities. Job loss due to implementing Alternative 1 would potentially impact all income and economic sectors throughout the ROI. Seen at the state level, the relatively higher minority populations in Hoke and Harnett counties could be seen as meaning that adverse impacts would have a disproportionate impact on those groups.

4.3.9 Energy Demand and Generation

4.3.9.1 Affected Environment

Fort Bragg's energy needs are currently met by a combination of natural gas and electric power, both of which are provided by private utilities.

Electricity. Progress Energy provides electric power to Fort Bragg via three 230-kilovolt (kV) transmission feeds into six substations located in the main cantonment area. A small portion of Fort Bragg's electricity is supplied by a few Electric Membership Cooperatives. Pope Army Airfield receives its power from the Fort Bragg system. While some of the distribution power lines are aerial and installed with telephone and cable distribution systems on common poles, Fort Bragg has begun to bury much of its distribution system. A private utility contractor operates and maintains the distribution conductors, poles, transformers and associated equipment including streetlights connected to the distribution system. Power demand has increased steadily to a peak of 135 megawatt (MW) in 2011; however, energy providers have been able to meet this load growth. Future decreases in energy intensity are anticipated as a result of greater energy efficiency.

Natural Gas. Fort Bragg has four medium to large, central heating systems, which include a variety of field-erected and packaged equipment units. There are also six central cooling systems and numerous individual heating and cooling systems on Fort Bragg. Many operational buildings and virtually all Family housing units are heated by self-contained, decentralized units. Natural gas-fired central boilers, and circulating hot water systems serve major building complexes. Oil- or gas-fired, hot air furnaces or heat pumps serve smaller buildings, duplexes and single family units. Natural gas is transported by pipeline to a single point of delivery by Piedmont Natural Gas. The ability of the natural gas supplier to meet an increase in future demands, if necessary, is unknown. The ability of the distribution system to meet demand increases also is unclear due to insufficient data. No study of the capability of the gas supplier to meet any increases in future load requirements has been performed. Current capabilities appear to be adequate based on operating experience of public works personnel (Jones, 2011).

4.3.9.2 Environmental Consequences

No Action Alternative and Alternative 1

Current energy needs would not deviate from existing use under the No Action Alternative and would be anticipated to have minor impact. Reducing personnel should result in less electricity

demand as a result of the implementation of Alternative 1. Additionally, the garrison implemented sustainability goals geared toward reducing electrical supply. A reduction of up to 8,000 personnel should not affect these goals.

4.3.10 Land Use Conflicts and Compatibility

4.3.10.1 Affected Environment

Fort Bragg is situated in the Sandhills of North Carolina, and consists of approximately 161,000 acres. Fort Bragg proper includes a cantonment area, the Weapons Range and Training Area, Pope Amy Airfield, and Simmons Army Airfield. Fort Bragg also includes two satellite areas, including Camp Mackall, a 7,919-acre sub-installation located 6.6 miles to the southwest, and the Richmond (Hoffman) tract, a 100-acre parcel located southwest of Fort Bragg in Richmond County, which is used for training.

Fort Bragg proper is irregularly shaped, stretching approximately 27 miles east and west and 16 miles north and south at its most distant points. The cantonment area is located in the southeastern end of the installation in Cumberland County; the Weapons Range and Training Area is primarily located in the central and western portions of the installation in Hoke, Cumberland, Harnett, and Moore counties.

The cantonment area, which occupies approximately 8,300 acres, is situated in the southeastern portion of the installation and includes a mix of administrative, operational, recreational, and community facilities, as well as vehicle maintenance and related facilities. Pope Army Airfield is on the northwest end and consists of approximately 2,000 acres. Simmons Army Airfield (579 acres) is located in the southeast corner of the cantonment area. The major community facilities (e.g., hospitals, schools, housing) are located in the middle of the cantonment area.

Encroachment on Fort Bragg's training lands from outside development requires that Fort Bragg carefully consider how its operations affect the surrounding area and how civilian land use near the installation affects operations. Fort Bragg planners work closely with regional governments to identify and mitigate any potential issues before they become impediments to training or conflict with land uses external to the installation. One product of that coordination effort was the 2008 update of the 2003 Regional Land Use Advisory Commission report. This update increases the regional land use plan from the 1-mile area surrounding the installation in 2003 to a 5 mile boundary area, as required by legislation passed in 2004 by the North Carolina legislature requiring all local governments to notify the commanding officer of a military base (located within 5 miles of its jurisdictional boundaries) of any proposed zoning changes. The purpose of the plan was to promote compatibility between military training and off-post development. This plan included recommendations to be enacted by both Fort Bragg and the surrounding communities that are designed to mitigate the effects of military training on Fort Bragg's neighbors (Parsons, 2009).

In Cumberland County, most land bordering Fort Bragg already is developed for residential use. In Hoke County, south of the installation boundary, development is not as widespread but is growing. Moore County, to the west-northwest and home of Southern Pines and Pinehurst golf courses, is undergoing substantial growth. The Woodlake area, near the northern boundary of Fort Bragg, is substantially developed. Harnett County, north of Fort Bragg, has an entirely different land use situation that could affect Fort Bragg. Currently, there is no zoning in place for the southern portion of the county closest to Fort Bragg. Mobile homes constitute a substantial and growing percentage of residential land use in this area. These structures have less noise attenuation capability than other types of dwelling units. As a result, there could be future land use incompatibility issues in Harnett County as this area develops.

4.3.10.2 Environmental Consequences

No Action Alternative and Alternative 1

Fort Bragg's land use would not be altered under the No Action Alternative nor would it change with a reduction of up to 8,000 Soldiers. A reduction in Soldiers would lead to less competition internally for training areas and training space, but there would not be any land use incompatibility issues anticipated that would affect any long-range development plans on or off Fort Bragg or future land use.

4.3.11 Hazardous Materials and Hazardous Waste

4.3.11.1 Affected Environment

Hazardous materials are used in most facilities at Fort Bragg, ranging from small quantities of cleaners and printing supplies to larger quantities of fuels, oils, and chemicals. E.O. 13423 states that all appropriate organizational levels including appropriate facilities, organizations, and acquisition activities, shall develop written goals and support actions to identify and reduce the release and use of toxic and hazardous chemicals and materials, including toxic chemicals, hazardous substances, O_3 depleting substances, and other pollutants that may result in significant harm to human health or the environment. The Fort Bragg HWMP 200-2 states that it is the Army's goal to continuously reduce hazardous waste generation by seeking non-hazardous substitution of hazardous materials, finding and developing markets for waste as a recyclable material, and promoting the total use of hazardous materials (USACE, 2006b).

Hazardous wastes are generated at Fort Bragg from various operations and facilities. The installation generates more than 2,200 pounds of hazardous waste per month and maintains a large quantity generator status under RCRA. Currently, Fort Bragg operates under a RCRA Subtitle C (EPA ID NC 8210020121 (200-2)), which authorizes storage of hazardous waste for a period of 90 days and Universal Waste for a period of 1 year in containers in Building 3-1240. In addition to Directorate of Public Works (DPW) storage facility, there are two 90-day storage facilities on Fort Bragg, located at the Womack Army Medical Center (Building 4-2817), and DPW HWRO 90-Day Storage Site, and a 90-Day Storage Site located at Camp Mackall (EPA ID NCR000144527 (RCRA Subtitle C).

Typical wastes routinely generated by on-going operations at Fort Bragg include universal waste, hazardous medical waste, weapons cleaning materials, chemical identification kits and mask filters, paint and paint-related products, pesticides, adhesives and sealants, solvents, battery acid, photographic developer and fixer solutions, fuel filters, contaminated fuel, and spent parts washer filters (USACE, 2006b). A large amount of waste solvent is generated by leased part washers and government-owned part washers. The waste solvent generated by the leased machines is taken off site for recycling. The waste solvent from the government-owned machines are collected in drums, taken to the DPW-ECB 90 day accumulation site for recycling or to be processed. In addition to hazardous waste, some regulated medical waste is generated through activities at the medical center, clinics, and field training exercises. This waste is collected in disposable red biohazard bags which are then placed in lined boxes. Medical waste is managed by contractors who take the waste off-site for incineration. Some medical waste may be radioactive (e.g., by products of therapy and treatments and diagnostic medical imaging). The procedures and practices for handling of radioactive medical waste are licensed under the Nuclear Regulatory Commission and the DA Radioactive Materials Authorization. Waste with a short half-life is stored in a secure locker at the Womack Army Medical Center, and waste with a long half-life is stored in the Preventive Medicine Bunker. All radioactive wastes are stored for 10 half-lives and then disposed of by an approved contractor.

4.3.11.2 Environmental Consequences

No Action Alternative

Overall, negligible effects are anticipated under the No Action Alternative. There would be no change in Fort Bragg's management of hazardous materials, toxic substances, hazardous waste, or contaminated sites. Fort Bragg would continue to manage existing sources of hazardous waste in accordance with the HWMP.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor impacts are anticipated as a result of the implementation of Alternative 1. In the short term, there would be an increase in the demolition of outdated and no longer needed facilities. This would increase the volume of solid waste generated. In addition, an increase in asbestos and LBP disposal is anticipated until facility reduction is completed as a result of this alternative. Construction workers and Army personnel would take measures to dispose materials in accordance with regulatory requirements installation management plans. A reduction of up to 8,000 personnel would not cause the installation to exceed installation's hazardous waste permit.

4.3.12 Traffic and Transportation

4.3.12.1 Affected Environment

Fort Bragg is located between Spring Lake and Fayetteville, North Carolina. Currently Fort Bragg is accessible through the I-95 and US-NC highway system. I-95 is located about 12 miles east of the post and is accessible through local arterial roads. The Fayetteville Outer Loop (I-295) is planned to connect to Fort Bragg to I-95 through a limited access highway. The anticipated completion of this project is early 2016.

Off-post Roadways Connecting Fort Bragg. The main roads that provide access to Fort Bragg are the All American Freeway, NC87 (Bragg Boulevard) and NC87-210 (Murchison Rd.) All American Freeway is a four lane divided roadway that is the main access connector into Fort Bragg. Visitors accessing post via the All American Freeway may use this gate for entry. Visitors entering post via Bragg Boulevard may use gates at Knox and Randolph Streets.

The Fort Bragg road system that connects to the North Carolina Department of Transportation roads is already experiencing capacity level failure. At this time Fort Bragg has not had the capacity to develop roadway projects to offset the existing traffic congestion. Troop decreases would benefit overall traffic conditions both on and off post.

Access Control Points. There are 16 ACPs or gates that control entry into Fort Bragg. The gates are located throughout the perimeter of the cantonment area. At each manned gate, security guards check vehicles before allowing access into the installation. Initially all these gates were manned full time. Budget limitations have forced the base to limit operation and close some of these ACPs. Troop decreases would relieve the problem of daily access to the base for the troops and civilian employees.

Parking. There are two distinct areas at Fort Bragg where parking availability presents different conditions. Post Exchange and commissary locations were observed to have adequate parking capacity; however, Womack Army Medical Center, Historic District, Soldier Support Center, and most training centers have inadequate parking capacity. Most Soldiers who live or commute to the base have at least one vehicle. The base is reviewing options such as satellite parking, shuttle system and parking decks. These plans would have to be incorporated into the off-post regional transportation network for optimum efficiency.

4.3.12.2 Environmental Consequences

No Action Alternative

Significant but mitigable impacts are anticipated. Surveys and studies conducted on the existing Fort Bragg's transportation system determined that, although basically sufficient to meet current needs, it is congested, and traffic improvements are needed.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have beneficial traffic impacts resulting from a reduction in force at Fort Bragg. It is anticipated that traffic congestion would be diminished and travel time would decrease. The roads would continue to be maintained and LOS for on- and off-post commuters would improve as traffic volume decreased. The decreased population would reduce traffic congestion on the installation and safety risks to pedestrians and bicyclists. A large percentage of the unit's married population, and unmarried Solders in the grade of E-6 (Staff Sergeant) and higher, reside in off-post housing. A reduction of off-post population would decrease traffic congestion, particularly the road network leading to the installation's cantonment area, during peak morning and evening hours.

4.3.13 Cumulative Effects

Region of Influence

Fort Bragg has been in operation supporting the Army since 1918. The ROI cumulative impact analysis encompasses five counties in North Carolina (Cumberland, Harnett, Hoke, Moore, and Scotland counties). The ROI was assessed for both direct and indirect impacts due to a reduction of up to 8,000 Soldiers.

There are numerous planned or proposed actions within the ROI that have the potential to cumulatively add to impacts of Army Force 2020. These actions are either in progress, or reasonably could be initiated within the next 5 years. A number of the Army's proposed projects have been previously identified in the installation's Real Property Master Planning Board and are programmed for future execution. A list of projects below presents some of the projects which may add to the cumulative impacts of the implementation of Army 2020 realignment alternatives.

Reasonably Foreseeable Future Projects

There are a number of reasonably foreseeable projects that may occur simultaneously with implementation of the Proposed Action. These projects that may add to cumulative impacts include BRAC, BRAC Discretionary and other Transformation, and Grow the Army projects. A list of reasonably foreseeable projects to be undertaken at Fort Bragg as well as in the region includes:

- Project Number (PN) 53555, Barracks Complex Third BCT, Phase III;
- PN 60272, 61172, 63850, 66227, 68526, 69287, 69293, 69302, 69382, 69448, 69493, 69552, 69758, 70751, 71229, 71861, 76364, 76369, 76375, 78499, Ammunition Supply Point (ASP) Bunker Demo, 108th Air Defense Artillery Round-out in conjunction with multiple MILCON projects supporting construction at the Old ASP/Patriot Point;
- PN 69835 and 80112 Sky Warrior Complex;
- Fort Bragg School Modernization (demo and consolidate Murray, McNair, Irwin, Butner, Pope, and Holbrook Schools);
- PN FF00013-7P, Land transfer to Harnett County;
- PN FF00041-1P, Charter School;

- PN FF00043-1P, Property transfer to Cumberland County;
- PN 55121 Aerial Gunnery Range;
- PN PT00003-2P Range 67 Expansion;
- ASP at Pope Air Force Base constructed;
- Northern Training Area – Linden Oaks Phase II Housing;
- Three Fort Bragg road improvements (Widen Gruber Road intersection at Zabitosky, widen Gruber Road intersection at Reilly Road and widen and resurface Vass Road to Morrison Bridge);
- Closure of Bragg Blvd to civilian through trips;
- Continued development pressure around the Fort Bragg and Pope Air Force Base perimeter, particularly in Cumberland, Harnett, Moore, and Hoke counties; and
- 00006 Privatize Army Lodging.

Other Agency (DoD and non-DoD) Actions (Past, Present, and Reasonably Foreseeable)

- Widening of All American Freeway (State Route 1007) form Owen Drive to the proposed Fayetteville Outer Loop Cumberland County (NC Department of Transportation); and
- Fayetteville Outer Loop Corridor Study (NC Department of Transportation).

Fort Bragg anticipates a range of cumulative effects resulting from the implementation of the Proposed Action and alternatives. Cumulative impacts for each alternative are as follows:

No Action Alternative

Beneficial through significant but mitigable adverse cumulative impacts would be anticipated from implementing the No Action Alternative. Under the No Action Alternative, no changes in military authorizations, or local environmental conditions would be anticipated. Installation facility shortages and excesses would remain at their currently planned levels without additional stationing or force reductions. The Army would continue to implement some facilities reductions of outdated/unused facilities. Under the No Action Alternative, cumulative impacts to the following VECs would have no impact, or have a minor impact only and are not carried forward for detailed discussion in this section. These VECs are: air quality, airspace, cultural resources, noise, biological resources, wetlands, water resources, facilities, socioeconomics, energy demand and generation, land use, and hazardous materials and hazardous waste. Soil erosion and traffic and transportation cumulative impacts are significant but mitigable under the No Action Alternative. Implementation of BMPs and the ITAM program mitigate soil erosion severity and frequency; traffic surveys and plans have been developed to improve Fort Bragg's transportation system.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Cumulative impacts from the proposed implementation of Alternative 1 would be beneficial, negligible or minor in most cases with the exception of socioeconomics, which are anticipated to be less than significant. The reduction of forces at Fort Bragg would result in less training, and facilitate accelerated accomplishment of conservation management practices due to reduced training conflicts.

The cumulative socioeconomic impact within the ROI, in addition to impacts described in Section 4.3.8.2, would be less than significant on the regional economy. Regionally, off-post unemployment has declined from 11.0 percent to 9.7 percent within the ROI from 2008 to 2012. A reduction of 8,000 Soldiers and civilians may negatively impact the Fort Bragg region by reducing home values if the housing demand declined, and lead to increased regional

unemployment of service sector jobs that service Soldiers and their Families. Nationally, unemployment has been trending lower since 2010. In April 2010, the national unemployment rate was 9.9 percent and as of October 2012 it was reported as 7.8 percent (Bureau of Labor Statistics, 2012). Under Alternative 1, the loss of 8,000 Soldiers in conjunction with other reasonably foreseeable proposals would have less than significant adverse impact. The potential reductions in Army Soldiers, when combined with other potential reductions, would have a cumulative economic impact, though it would not likely be significant.

4.4 FORT CAMPBELL, KENTUCKY

4.4.1 Introduction

Fort Campbell is an Army installation located on approximately 105,000 acres in Montgomery and Stewart counties, in Tennessee, and Trigg and Christian counties, in Kentucky (Figure 4.4-1). About 14 percent of the installation is developed, while about 86 percent is undeveloped area maintained for military training. In the training area, forests, streams, fields, and other natural settings are maintained to provide a realistic context for training activities. The training area contains about 26,000 acres of ranges and impact areas, and approximately 64,000 acres of light maneuver areas. Except for roads, cleared areas, and structures associated with training ranges, heliports, storage, and support facilities, most of the training area consists of natural habitat including forests, fields, fields leased for agriculture, lakes, streams and wetlands.

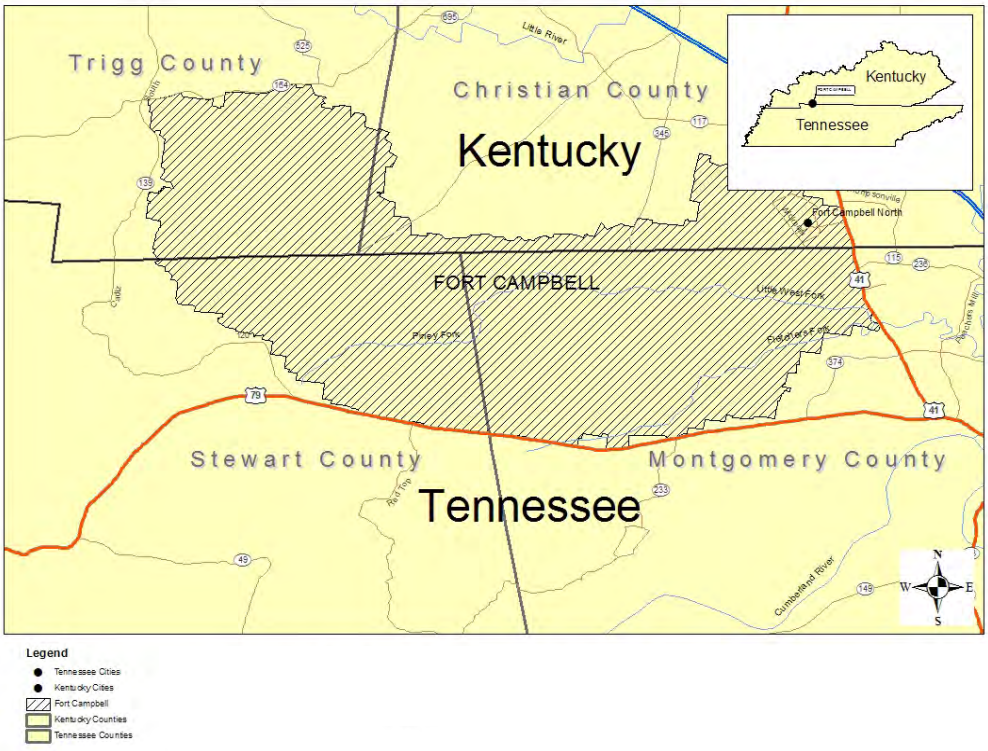

Figure 4.4-1. Fort Campbell

Fort Campbell has several areas identified as "drop zones" and "landing zones" used primarily for parachute training and air assault (helicopter operations) training.

Approximately 15,000 acres of the installation is cantonment area, which includes the main post, as well as the Campbell Army Airfield and Sabre Heliport. Vegetation in the cantonment area is primarily ornamental lawns, shrubs, and trees cultivated for aesthetic purposes; there are no natural terrestrial or aquatic communities in the cantonment area.

Fort Campbell is the home of the Screaming Eagles of the 101st Airborne Division (Air Assault) and tenant units totaling approximately 34,400 Active Duty personnel. Fort Campbell is the home of the 1/2/3/4 BCTs, 101st CAB, 159th CAB and 101st SUSBDE. Tenant Unit's consist of the 5th Special Forces Group (SFG) (Airborne), 160th Special Operations Aviation Regiment, 52nd Ordnance Group, 31st Military Police Detachment, 326th Engineer Battalion, 902nd Military

Intelligence Group, 86th Combat Support Hospital, 716th Military Police Battalion and 2d Battalion, 44th Air Defense Artillery Regiment. The U.S. Air Force has four units at Campbell Army Airfield: 19th Air Support Operation Squadron, 621st Air Mobility Operations Group, 2nd Detachment, 10th Combat Weather Squadron and 4th Detachment, 18th Weather Squadron.

Fort Campbell's primary mission is to advance the combat readiness of the 101st Airborne Division (Air Assault) and the non-divisional units posted at the installation through training, mobilization, and deployment. Fort Campbell is capable of deploying combat equipped Soldiers, tactical vehicles, weapons and ammunition, and logistical equipment to sustain thousands of Soldiers in a tactical environment for an extended period of time. The installation serves as a Premier Power Projection Platform for the 101st Airborne Division and for Special Operations Command units.

4.4.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Campbell does not anticipate any significant adverse environmental impacts as a result of the implementation of Alternative 1 (Force reduction of up to 8,000 Soldiers and Army Civilians) or Alternative 2 (Installation gain of up to 3,000 Soldiers). Fort Campbell anticipates significant socioeconomic impacts to economic activity, employment, and population as a result of Alternative 1. Table 4.4-1 summarizes the anticipated impacts to VECs for each alternative.

Table 4.4-1. Fort Campbell Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 8,000	Alternative 2: Growth of up to 3,000
Air Quality	Negligible	Negligible	Negligible
Airspace	Negligible	Negligible	Negligible
Cultural Resources	Negligible	Negligible	Negligible
Noise	Negligible	Negligible	Negligible
Soil Erosion	Minor	Beneficial	Minor
Biological Resources	Negligible	Negligible	Negligible
Wetlands	Negligible	Negligible	Negligible
Water Resources	Minor	Beneficial	Minor
Facilities	Negligible	Beneficial	Less than Significant
Socioeconomics	Minor	Significant	Beneficial
Energy Demand and Generation	Negligible	Beneficial	Minor
Land Use Conflict and Compatibility	Negligible	Negligible	Negligible
Hazardous Materials and Hazardous Waste	Negligible	Negligible	Negligible
Traffic and Transportation	Negligible	Beneficial	Significant but Mitigable

4.4.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section below, no more than a beneficial or negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- ***Air Quality.*** The Proposed Action and alternatives considered are not anticipated to adversely impact regional air quality. Current installation air emissions are well below limits agreed upon between Fort Campbell and the states of Kentucky and Tennessee. Minimal impacts on NAAQS pollutants from both stationing alternatives are anticipated.
- ***Airspace.*** The Proposed Action and alternatives would have no effect on the existing airspace. No addition or reduction in current aviation assets would occur as a result of any of the alternatives considered. Only negligible increase or decrease in UAS training may occur, if there were any change at all in airspace use requirements.
- ***Cultural Resources.*** The Proposed Action and alternatives are not anticipated to adversely impact cultural resources. Existing protocols and procedures for site placement at Fort Campbell make the unintentional damage of a historic property, either through demolition or construction, unlikely. Fort Campbell periodically monitors significant archaeological sites and known prehistoric burials for compliance with the ARPA and NAGPRA.
- ***Noise.*** No adverse noise impacts are anticipated from the Proposed Action and alternatives. The NZs impacted from air traffic (general purpose and attack helicopters) are already heavily trafficked and would not see a major increase in use or operations. The installation already has mitigations in place to help reduce current noise.
- ***Biological Resources.*** The Proposed Action and alternatives would not adversely impact endangered species or their habitat. The installation has developed an Endangered Species Management Component in coordination with the USFWS and coordinates all activities that may have an adverse impact with the USFWS. Management controls are in place to reduce the chance of a violation.
- ***Wetlands.*** No impacts to installation wetlands are anticipated as a result of the Proposed Action and alternatives. Wetlands are designated as non-training areas and Soldiers are provided instruction on authorized activities around wetland areas through the Directorate of Plans, Training, Mobilization, and Security, Range Division, ITAM program. Fort Campbell proactively monitors wetland areas and ensures that required training does not impact wetlands areas.
- ***Land Use Conflict and Compatibility.*** No significant impacts to existing land uses on and around the installation are anticipated as a result of the Proposed Action and alternatives. Although Fort Campbell has a training land deficit, the installation Range Division has the capability to schedule multiple activities within the training lands to meet the requirements of the Proposed Action. A reduction in troop strength would not alter existing land use nor cause compatibility issues with adjacent land uses.
- ***Hazardous Material and Hazardous Waste.*** The Proposed Action and alternatives would not negatively impact the current hazardous waste handling capabilities on Fort Campbell. Materials used, stored, and handled may increase; however, existing procedures, regulations, and facilities are able to meet storage, use, and handling requirements. Adequate hazardous waste disposal facilities are available to manage an increase in hazardous waste.

Fort Campbell anticipates that the implementation of any of the alternatives would result in negligible impacts for those VECs discussed above. The following provides a discussion of the

VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Proposed Action alternatives.

4.4.2 Soil Erosion

4.4.2.1 Affected Environment

Fort Campbell is located near the boundary of the Lexington Plain of southwestern Kentucky and the Highland Rim Plateau of northwestern Tennessee. The installation is within the Western Highland Rim, which surrounds the Pennyroyal Plateau. Landscape topography includes gently rolling hills with steep dissected hilly land along the western boundary. Elevation ranges from 400 feet to 700 feet.

The USDA soil map for Fort Campbell identifies 30 soil mapping units on the installation. The major soil associations are Pembroke-Crider, Nicholson, and Dickson-Mountview (USDA, 1975; USDA, 1981). Pembroke-Crider soils are found in areas identified as barrens on the eastern side of the installation. Nicholson soils are found on ridges, plateaus, and slopes adjacent to streams. Dickson-Mountview soils are found on the gently rolling plains that constitute the majority of the installation.

Soil information for Fort Campbell indicates that the potential for erosion for over half of the soil mapping units on the installation is moderate to severe. Because of a high degree of topographic variation within soil mapping units, erosion potential varies considerably among locations within units. Most problems associated with soil erosion on Fort Campbell result from the removal of vegetation on moderate to severe slopes or on long gradual slopes.

Erosion is influenced by the soil composition, slope, and annual rainfall. At one time Fort Campbell used a firebreak system which heavily influenced soil erosion rates. The installation has closed the firebreak system through obliteration of breaks by land smoothing and reseeding. Some of the breaks were upgraded to gravel forest access roads.

Unauthorized stream crossings have been closed and revegetated. The installation was notified of a 401D Violation in regards to the sediment in the streams exceeding the CWA standards. Most of the wheeled vehicle traffic on the installation is on gravel secondary roads and range access roads.

4.4.2.2 Environmental Consequences

No Action Alternative

No changes in current installation erosion conditions are anticipated under the No Action Alternative. Fort Campbell would continue identifying and repairing erosion locations through the installation through the ITAM program. Sediment transport would continue to be monitored and funding of corrective actions would continue.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

The decrease in troop numbers would be beneficial to soil erosion impacts currently being experienced at Fort Campbell. Seventy-five percent of the installation consists of highly erodible soils and areas of severe erosion exist. Reduction of off-road traffic could improve soil conditions and reduce the potential of sedimentation into surface waters within and surrounding the installation. The ITAM program would continue to identify and repair existing erosion sites. The reduction of 8,000 Soldiers, including a BCT, would provide land rehabilitation crews with more access to assist in training area rehabilitation and would allow more time for natural revegetation to occur. Training use in the training areas would be anticipated to decrease slightly in intensity and, therefore, result in less soil compaction and loss of vegetative cover, thereby reducing some water and wind erosion of soils.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be minor impacts on soils as a result of the implementation of Alternative 2. The addition of up to 3,000 Soldiers may increase training area usage by up to 10 percent over current levels; however, it is anticipated that much of the mounted training would be conducted on roads and hardened surfaces. Exercises that require some off-road training may result in minor soil impacts. The terrain would likely show the impact from the vehicle maneuvers, turns and traction, digging, and deep ruts. These areas could then be more prone to water erosion; however, off-road activities are monitored through the ITAM program and their effects are minimized by the use of appropriate BMPs for controlling runoff, erosion, and sedimentation. Although erosion occurs, it is contained and repaired. The condition of existing (unimproved) range roads and their ability to support for heavy truck traffic would have to be evaluated.

4.4.3 Water Resources

4.4.3.1 Affected Environment

Fort Campbell's major water usages are for water supply, recreation, training, and aquatic habitat. Vehicular traffic is limited to crossings at bridges and hardened stream crossings within these areas. The majority of streams are impaired by on-going military and non-military activities.

Surface Water and Watersheds. The surface water systems of Fort Campbell consist of 422 stream miles and four small man-made lakes at scattered locations. Major streams are perennial with substrates ranging from unconsolidated sediments to cobble (Fort Campbell, 1999). All streams are impaired and listed as state priority waterways for TMDL development. Many of the streams are impaired as a result of too much sediment in the water. The installation is divided into three subwatersheds; Little West Fork Creek, Saline Creek, and Casey Creek, all of which drain to the Cumberland River. The Cumberland River is approximately 9 miles south of the installation and flows into the Ohio River, ultimately reaching the Gulf of Mexico through the Mississippi River system (U.S. Army, 1994). The Little West Fork Creek watershed covers most of the installation, including the cantonment area, Campbell Army Airfield, training areas, ranges, and impact areas. The Saline Creek and Casey Creek watersheds drain the northwest portion of the post, which encompasses training areas, ranges, and impact areas (Fort Campbell, 2004).

Peak water flow typically occurs during the period from December through April, then gradually receding during the low flow period of August through October. Stream flow during dry periods is maintained by springs (Fort Campbell, 1999). There is a strong connection between surface waters and groundwater on Fort Campbell. Because of the karst terrain, streams may exhibit losing characteristics (flow is lost to groundwater) and gaining reaches (groundwater discharge increases stream flow). Subsequently, these streams can, and often do, reappear in another location as a spring. Disappearing streams are more likely to occur during drought conditions in late summer and early fall when the water table drops (Fort Campbell, 1999).

Surface water quality is moderately impacted by installation activities. The amount of sedimentation in streams resulting from erosion can be moderate to severe, as determined by the loss of rocky substrates in streams through burial by sediments. Sedimentation is the most serious issue impacting water quality at Fort Campbell. Steps being implemented to minimize water quality degradation include cessation of grading bare soil firebreaks twice yearly, which allows these areas to develop vegetative cover to hold the soil; and aggressive enforcement of erosion controls requirements on construction projects in the cantonment area. Sediment accumulation data has been collected at several locations as part of the Land Condition Trend

Analysis program. Monitoring results show that sedimentation has been affecting biotic communities and compromising the aquatic systems at Fort Campbell (BHATE Environmental Associates, Inc., 2004).

Water Supply. Boiling Spring is Fort Campbell's primary source of drinking water. It receives groundwater from the Boiling Spring groundwater basin that is approximately 50 square miles. Fort Campbell's drinking water system is a privatized system with a 7.6 mgd capacity.

Wastewater. Fort Campbell's privatized WWTP services the cantonment area, Campbell Army Airfield, and Sabre Heliport. The 4 mgd facility provides both primary and secondary treatment and meets all applicable water quality standards. Additional generation of solid wastes are within the capacity of local and regional waste disposal facilities.

Stormwater. Surface soil erosion caused by stormwater leads to considerable surface water impacts at Fort Campbell. Impacts are mitigated by sediment and erosion controls at construction locations. The installation and the USACE are working with construction contractors to ensure that proper stormwater controls are constructed and utilized, operated, and maintained at construction sites. The ability of the installation and USACE to properly enforce these requirements has been limited in the past, but is improving. Other activities that may be contributing to the sediment and erosion problems include runoff from agricultural operations, military training, vehicle fluid spillage, pesticides, fertilizers, and animal waste.

4.4.3.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, no change from existing conditions would occur. Fort Campbell would continue to monitor surface water quality and develop projects to improve existing conditions. Minor impacts to surface waters would result from the No Action Alternative.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

A decrease in Army forces would be beneficial to water resources. Reduction in Soldier and civilian strength would reduce overall Fort Campbell water consumption and requirements for water treatment. Although existing watershed impairments exist, no additional impacts to the watershed would be anticipated, and in fact, the potential reduction of off-road maneuver days may reduce the potential for sediment runoff.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Minor impacts to water resources are anticipated as a result of the implementation of Alternative 2. The addition of 3,000 personnel would increase water demand for consumption. Water demand is anticipated to increase with a higher amount of Soldiers stationed at the installation. There would also be a potential impact on watersheds as all streams are listed as state priority waterways for TMDL development. Training area surface water impacts are monitored by the DPW, Environmental Division in support of natural resource management. The installation conducts management meetings to discuss solutions to existing impacts and to develop preventative measures that support mission critical training exercises. Sufficient management controls exist to prevent unpermitted sediment deposition into waters of the U.S. The Fort Campbell DPW, Environmental Division has developed a comprehensive construction site inspection program to ensure compliance with installation water quality permits.

4.4.4 Facilities

4.4.4.1 Affected Environment

Fort Campbell is located approximately 1 mile south of Hopkinsville, Kentucky and abuts Oak Grove, Kentucky and Clarksville, Tennessee. The post straddles the Kentucky-Tennessee border; approximately 70,000 acres (two-thirds of the total area) of the installation are located in Tennessee.

Built-up areas include the cantonment area, the former Clarksville Base, the installation construction debris landfill, and several small solid waste management units. A variety of small land uses are located in the built-up areas including administration, operational training and maintenance, landing strips for fixed-wing aircraft and helicopters, motor pools, supply and storage, maintenance, commercial and medical services, industrial, community facilities, Soldier and Family housing, recreation, and open space.

The Master Plan for Fort Campbell is currently supporting four infantry brigades, two aviation brigades, one SUSBDE, two special operations brigades, and miscellaneous tenants. There is buildable space on the installation to support additional growth, but not within existing areas designated for facilities construction. Fort Campbell faces mission support facility challenges. Units are operating at approximately 50 percent of their authorized space on average: this shortfall includes relocatable and temporary structures. Fort Campbell has only 39 percent of the total maneuver area needed to train the 101st Division's platoon, company, and battalion mission essential tasks. The shortage of maneuver area is even greater when adding the maneuver area requirements of the 5th SFG (A). Fort Campbell does however have sufficient range throughput capability to support Alternative 2, when scheduling work-arounds and other training management measures are implemented.

4.4.4.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, no change from existing conditions would occur. Fort Campbell would continue to utilize existing space to support administrative and billeting needs of the Fort Campbell community. Current planning documents adequately support space requirements on the installation.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Overall beneficial impacts to facilities and infrastructure are anticipated. A reduction of up to 8,000 Soldiers would provide the installation the opportunity to reduce aging and relocatable facilities. Some units, currently in facilities that are well below the authorized requirement, would have the opportunity to relocate to a more appropriately configured building or facility. No adverse impacts to the existing utility system are anticipated. Energy efficiency may be gained by demolition of selected World War II wooden facilities. Other more modern facilities may be re-purposed for new uses to provide units and tenants with more facility space to conduct operations.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Less than significant impacts to facilities and infrastructure are anticipated. An increased Soldier strength of 3,000 would be reflected through increased infrastructure requirements throughout the cantonment area. The addition of 3,000 Soldiers would require new MILCON to support this alternative, as the current facilities shortfall for existing units is pervasive and would not permit additional sharing of facilities to meet the mission requirements of new units. Very limited

administrative and billet space is available to support an additional 3,000 Soldiers as a result of this alternative.

4.4.5 Socioeconomics

4.4.5.1 Affected Environment

The ROI consists of Fort Campbell and the surrounding communities, including Christian and Trigg counties in Kentucky and Montgomery and Stewart counties in Tennessee. Fort Campbell straddles the Kentucky-Tennessee border between Hopkinsville, Kentucky and Clarksville, Tennessee.

Population and Demographics. The Fort Campbell population is measured in three different ways. The daily working population is 32,289, and consists of full-time Soldiers and Army civilian employees working on post. The population that lives on Fort Campbell consists of 13,939 Soldiers and an estimated 12,866 dependents, for a total on-post resident population of 26,805. Finally, the portion of the ROI population related to Fort Campbell is 46,222 and consists of Soldiers, civilian employees, and their dependents living off post.

The ROI county population is approximately 280,000. Compared to 2000, the 2010 population increased in Christian, Trigg, Montgomery, and Stewart counties (Table 4.4-2). The racial and ethnic composition of the ROI is presented in Table 4.4-3.

Table 4.4-2. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Christian	75,000	+ 2.3
Trigg	15,000	+ 13.8
Montgomery	175,000	+ 27.9
Stewart	15,000	+7.7

Table 4.4-3. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Kentucky	86	8	1	3	0	1	0
Tennessee	76	17	1	5	0	1	0
Christian	69	21	0	6	1	3	0
Trigg	88	8	0	1	0	2	0
Montgomery	67	19	0	8	2	3	1
Stewart	94	1	1	2	1	2	0

Data taken from the U.S. Census Bureau website, 22 February 2012.

Permanent party Soldiers and full-time civilians generate demand for housing, enroll their children in local schools, and require municipal services like other households in the region. Temporary duty (TDY) personnel and transient military and civilian populations generate increased demand for lodging, dining, and retail services in the area.

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased in Montgomery and Stewart counties.

Regionally, off-post unemployment has risen from 5.0 percent to 8.2 percent within the ROI from 2005 to 2012. Unemployment increased in Christian and Trigg counties, as well as in Kentucky and Tennessee (Table 4.4-4). Employment, median home value, household income, and poverty levels are presented in Table 4.4-4.

Table 4.4-4. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
Kentucky	1,486,545	- 1.8	113,100	40,061	18.40
Tennessee	2,317,986	- 3.0	128,000	41,715	17.20
Christian	22,186	- 1.8	92,100	35,785	19.00
Trigg	2,352	- 14.2	98,300	41,825	13.00
Montgomery	37,864	+ 13.0	122,700	46,523	13.80
Stewart	1,205	+ 3.4	105,900	40,214	17.10

Fort Campbell has Family quarters totaling 4,457 for officers and 4,010 for enlisted personnel, through an RCI partnership. Barracks spaces for unaccompanied personnel total 9,731. Off-post housing consists predominately of single-family dwellings with limited multi-family dwellings. The surrounding counties have numerous single-family housing developments under construction with limited multi-family construction in the ROI.

Schools. Children of military personnel attend either the Fort Campbell School System or school systems within ROI communities. The ROI includes four public school districts supporting 35 elementary, 12 middle, 12 high, and two alternative schools (Table 4.4-5). Numerous private schools are located throughout the ROI. Clarksville-Montgomery County School System, the largest system in the ROI, plans to open two new elementary schools to support the growing K-5 student population. School systems within the ROI receive significant federal funding based on the number of military dependents they support.

Table 4.4-5. Public School Systems within the ROI

Public School System	Elementary	Middle	High	Alternative	Total
Christian County School System	10	3	2	1	**16**
Clarksville-Montgomery County School System	22	7	8	1	**38**
Stewart County School System	2	1	1	0	**4**
Trigg County School System	1	1	1	0	**3**
TOTAL	**35**	**12**	**12**	**2**	**61**

Public Health and Safety

- ***Police.*** The Fort Campbell Police Department, a part of the Directorate of Emergency Services, provides law enforcement and property protection at Fort Campbell. Police functions include protecting life and property, enforcing criminal law, conducting investigations, regulating traffic, providing crowd control, and performing other public safety duties. City, county, and state police departments provide law enforcement in the ROI.

- ***Fire.*** The Fort Campbell Fire Department, a part of the Directorate of Emergency Services (DES), provides emergency firefighting and rescue services at Fort Campbell. The Fort Campbell Fire Department responds to emergencies involving structures, facilities, transportation equipment, hazardous materials, and natural and man-made disasters, and directs fire prevention activities; and conducts public education programs. The DES has mutual aid agreements with Kentucky and Tennessee Departments of Forestry, USFS and local counties and cities within the ROI.
- ***Medical.*** Fort Campbell supports a range of medical services. The Blanchfield Army Community Hospital (BACH) provides healthcare services for military personnel, military dependents, and to military retirees and their dependents. BACH services include audiology/speech pathology, dermatology, dietetics, emergency services, family medicine, internal medicine, OB/GYN, occupational therapy, ophthalmology, optometry, orthopedics, otolaryngology, pediatrics, physical therapy, psychiatry, surgery, podiatry, psychology, social work, and substance abuse. Fort Campbell also provides dental services for Soldiers and their dependents.

Family Support Services. The Fort Campbell FMWR and ACS provide programs, activities, facilities, services, and information to support Soldiers and Families. Services provided at Fort Campbell include child care, youth programs, deployment readiness for Families, employment readiness, financial readiness, relocation readiness, exceptional Family member support, Warrior in transition support, and survivor outreach.

Recreation Facilities. Fort Campbell recreational facilities include fitness centers, swimming pools, athletic fields, golf course, bowling center, outdoor recreation opportunities, and sports teams. The installation supports numerous fee and non-fee recreational programs for Soldiers and their dependents annually.

4.4.5.2 Environmental Consequences

No Action Alternative

There would be no change or minor impacts anticipated under the No Action Alternative. Fort Campbell would be anticipated to continue providing a positive economic impact to the surrounding community under the No Action Alternative. No additional impacts to housing, public and social services, public schools, public safety, or recreational activities are anticipated. Fort Campbell's continuing operations represent a beneficial source of regional economic activity and any increase in Soldiers would beneficially affect socioeconomics in the region.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of up to 8,000 military employees (Soldier and Army civilian employee), each with an average annual income of $41,830. In addition, this alternative would affect an estimated 4,464 spouses and 7,680 dependent children for a total estimated potential impact to 12,144 dependents. The total population of military employees and their dependents directly affected by Alternative 1 would be 20,144.

Based on the EIFS analysis, there would be significant impacts for employment and population for this alternative. There would be no significant socioeconomic impacts for sales volume or income in the ROI. The range of values that represents a significant economic impact in accordance with the EIFS model are presented in Table 4.4-6, along with predicted percentages for Alternative 1. Table 4.4-7 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.4-6. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	13.63	12.75	11.51	7.59
Economic Contraction Significance Value	- 8.6	- 6.99	- 5.25	- 1.62
Forecast Value	- 7.42	- 6.24	- 10.32	- 7.19

Table 4.4-7. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- $363,278,500	- $369,068,500	- 8,855 (Direct) - 1,044 (Indirect) - 9,899 (Total)	- 20,144
Percent	- 7.42 (Annual Sales)	- 6.24	- 10.32	- 7.19

The total annual loss in sales volume from direct and indirect sales reductions in the ROI represents an estimated -7.42 percent reduction. State tax revenues would decrease by approximately $21.8 million as a result of decreased sales. Some counties within the ROI supplement the state sales tax of 6 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by an estimated 6.24 percent. While 8,000 direct Soldier and Army civilian positions would be lost within the ROI, EIFS estimates another 855 military contract service jobs would be lost as a direct result of the implementation of Alternative 1, and an additional 1,041 job losses would occur from a reduction in demand for goods and services in the ROI. The total reduction in demand for goods and services within the ROI is projected to lead to a loss of 9,899 non-farm jobs, or a -10.32 percent change in regional non-farm employment. This is a significant adverse economic impact. The total number of employed non-farm positions in the ROI is estimated to be 95,896. A significant population reduction of 7.19 percent within the ROI is anticipated as a result of this alternative. Of the approximately 280,000 people (including those residing on Fort Campbell) that live within the ROI, 20,144 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This could lead to a decrease in demand for housing, and increased housing availability in the region. This would lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes Army civilian and military members and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.4-8 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.4-8. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- $365,808,847 (Local) - $577,235,056 (State)	- $406,640,553	- 9,037 (Direct) - 1,152 (Indirect) - 10,189 (Total)
Percent	- 7.48 (Total Regional)	- 6.88	- 10.63

The total annual loss in direct and indirect sales in the region represents an estimated -7.48 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 0.06 percentage points more than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, state tax revenues would decrease by approximately $34.63 million as a result of the loss in revenue from sales reductions, which is $12.63 million more in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by -6.88 percent, slightly more than the -6.24 percent reduction projected by EIFS. While 8,000 direct Soldier and Army civilian employee positions would be lost within the ROI, RECONS estimates another 1,037 direct contract and service jobs would be lost, and an additional 1,152 job losses would occur indirectly from a reduction in demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 10,189 jobs, or a -10.63 percent change in non-farm regional employment, which is 0.32 percentage points greater than projected under the EIFS model.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 1 would lead to an overall reduction of economic activity within the ROI of roughly the same magnitude.

***Population and Demographics*.** Fort Campbell anticipates a significant loss in military population and training throughput as a result of the implementation of Alternative 1. A reduction in Fort Campbell's civilian population may be implemented due to the loss of civilian support requirements. Installation population and demographic composition is subject to further change with future guidance from higher headquarters.

Housing. Alternative 1 would increase the availability of barracks space for unaccompanied personnel and the increase the availability of Family quarters. Those outcomes would likely decrease the off-post demand for rentals and purchases of housing.

Schools. Fort Campbell anticipates the potential for significant adverse impact to the school districts located within the ROI under Alternative 1. More than 9,700 military-connected students attend off-post public schools (Table 4.4-9). The school districts within the ROI receive significant federal and DoD funding based on the number of military-connected children they support. Impacts to school district funding would be seen throughout the ROI. The proposed reduction would affect the Clarksville-Montgomery County School System disproportionately due to the large number of military-connected children, 8,310 or 27.2 percent of the total student population, attending this system. CMCSS has invested significant local funds to construct new schools in support of the growing student population. Loss of funds in support of military-connected children to school districts within the ROI would lead to adverse impacts to school funding if Alternative 1 is implemented.

Table 4.4-9. Military-connected Students Attending Public School Systems within the ROI

Public School System	Population (Students)	Military-connected (Students)	Military-connected (Percent)
Christian County School System	8,772	1,185	13.5
Clarksville-Montgomery County School System	30,450	8,310	27.2
Stewart County School System	2,263	113	4.9
Trigg County School System	2,055	146	7.1
TOTAL	**43,540**	**9,754**	**22.4**

Public Health and Safety. As a result of the implementation of Alternative 1, resident and daytime population levels on Fort Campbell would decrease. This decrease could potentially reduce demand on law enforcement, fire and emergency service providers, and medical care providers on and off post. Fort Campbell anticipates less than significant impacts to public health and safety under the Alternative 1.

***Family Support Services*.** As a result of the implementation of Alternative 1, a reduction in permanent-party Soldiers could reduce demand on Family support service providers on post. Active Duty military, remaining permanent party Soldiers, retirees and their dependents would continue to demand child care and other ACS programs. Off-post Family support services throughout the region would not likely experience a significant decrease in clients. Fort Campbell anticipates less than significant impacts to Family support services under the Alternative 1.

Recreation Facilities. A reduction in permanent-party Soldiers could potentially decrease use of recreation facilities on post. Any decrease in utilization would be minor. Fort Campbell does not anticipate significant adverse or beneficial impacts to recreation facilities under the Alternative 1.

Environmental Justice. As a result of the implementation of Alternative 1, Fort Campbell does not anticipate a disproportionate adverse impact to minorities, economically disadvantaged populations or children would occur in the ROI. Fort Campbell anticipates that job loss would be felt across economic sectors and at all income levels and spread geographically throughout the ROI. The proposed force reduction in military authorizations on Fort Campbell would not have disproportionate or adverse health effects on low-income or minority populations in the ROI. Christian County has a higher proportion of African American and Hispanics than Kentucky as a whole. Montgomery County has a higher proportion of African American and Hispanics compared to Tennessee. On a state-wide level, adverse impacts under Alternative 1 could be seen as having a disproportionate adverse impact on these minority groups.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Economic Impacts. Alternative 2 would result in the gain of up to 3,000 Soldiers, with an average annual income of $41,830 each. In addition, this alternative would affect an estimated 1,674 spouses and 2,880 dependent children for a total estimated potential impact to 4,554 dependents. The total population of military employees and their dependents directly affected by Alternative 2 would be 7,554.

Based on the EIFS analysis, there would be no significant impacts for sales volume, income, population, or employment. The range of values that represents a significant economic impact in accordance with the EIFS model are presented in Table 4.4-10, along with the predicted

percentages for Alternative 2. Table 4.4-11 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.4-10. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 2

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	13.63	12.75	11.51	7.59
Economic Contraction Significance Value	- 8.6	- 6.99	- 5.25	- 1.62
Forecast Value	2.78	2.34	3.87	2.70

Table 4.4-11. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	$136,229,400	$138,400,700	3,321 (Direct) 391 (Indirect) 3,712 (Total)	7,554
Percent	2.78 (Annual Sales)	2.34	3.87	2.70

The total annual gain in sales volume from direct and indirect sales increases in the ROI would represent an estimated 2.78 percent increase. State tax revenues would increase by approximately $8.1 million as a result of increased sales. Some counties within the ROI supplement the state sales tax of 6 percent by varying percentages, and these additional local tax revenues would be gained at the county and local level. Regional income would increase by 2.34 percent. While 3,000 Soldiers would be directly gained within the ROI, EIFS estimates another 321 military contract service jobs would be gained directly as a result of Alternative 2, and an additional 391 jobs would be created from an increase in demand for goods and services in the ROI. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 3,712 non-farm jobs, or a 3.87 percent change in regional non-farm employment. The total number of employed non-farm positions in the ROI is estimated to be 95,896. A population increase of 2.70 percent within the ROI is anticipated as a result of this alternative. Of the approximately 280,000 people (including those residing on Fort Campbell) that live within the ROI, 7,554 military employees and their dependents would begin to reside in the area following the implementation of Alternative 2. This would lead to an increase in demand for housing, and decreased housing availability in the region. This would lead to a slight increase in median home values.

Table 4.4-12 shows the total projected economic impacts, based on the RECONS model for Alternative 2.

Table 4.4-12. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment
Total	$137,178,317 (Local) $216,463,146 (State)	$152,490,207	3,389 (Direct) 432 (Indirect) 3,821 (Total)
Percent	2.80 (Total Regional)	2.58	3.98

The total annual gain in direct and indirect sales in the region represents an estimated 2.80 percent change in total regional sales volume according to the RECONS model, an impact that is only 0.02 percentage points greater than projected by EIFS; however, gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, state tax revenues would increase by approximately $12.99 million as a result of the gain in revenue from sales reductions, which would be $4.89 million more than the additional state sales tax revenue projected by the EIFS model. Regional income is projected by RECONS to increase by 2.58 percent, slightly more than the 2.34 percent increase projected by EIFS. While 3,000 Soldiers would be directly gained within the ROI, RECONS estimates another 389 direct contract and service jobs would be gained, and an additional 432 jobs would be created from indirect increases in demand for goods and services in the ROI as a result of population increase. The total estimated increase in demand for goods and services within the ROI would lead to a gain of 3,821 jobs, or a 3.98 percent change in regional employment, which is 0.11 percentage points greater than projected under the EIFS model.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 2 would lead to a net increase of economic activity within the ROI of roughly the same magnitude.

Population and Demographics. Under Alternative 2, Fort Campbell anticipates a minor increase in military population and training throughput.

Housing. Alternative 2 would likely add to the pool of Soldiers that want to live on post. Barracks space for unaccompanied personnel and quarters for Families would be available to a smaller percentage of Soldiers in the total Fort Campbell population. As a result, the demand for off-post rentals and purchases of housing would likely increase. Fort Campbell anticipates long-term, minor beneficial impacts in the ROI.

Schools. Fort Campbell anticipates the potential for minor impacts to the school systems within the ROI under Alternative 2. Local school districts have integrated higher numbers of students into their schools due to the recent Army growth of Fort Campbell in recent years. Alternative 2 would further challenge local school districts to a minor degree.

Public Health and Safety. Under Alternative 2, the anticipated population increase at Fort Campbell would likely increase the demand for law enforcement services, fire and emergency services, and medical care services on and off post. Fort Campbell anticipates minor impacts to public health and safety under the Alternative 2.

Family Support Services. Under Alternative 2, Fort Campbell anticipates an increased demand for FMWR and ACS programs on post. The demand for Family support services off post would likely increase also. Fort Campbell anticipates minor impacts to Family support services under Alternative 2.

Recreation Facilities. Use of recreation facilities on post would likely increase under Alternative 2. Some facilities could become crowded and less user-friendly during peak use hours. Fort Campbell anticipates that utilization increases would be minor.

Environmental Justice. As a result of the implementation of Alternative 2, Fort Campbell does not anticipate a disproportionate adverse impact to minorities, economically disadvantaged populations or children would occur in the ROI. Fort Campbell anticipates that job losses would be felt across economic sectors and at all income levels and spread geographically throughout the ROI. The proposed force reduction in military authorizations on Fort Campbell would not have disproportionate or adverse health effects on low-income or minority populations in the ROI.

4.4.6 Energy Demand and Generation

4.4.6.1 Affected Environment

Fort Campbell's energy needs are currently met by a combination of electric power and natural gas. Although there are multiple providers of electricity at Fort Campbell, large scale demand electricity is provided by the Tennessee Valley Authority and natural gas is supplied by the Defense Logistics Agency.

Electricity. Electric power is supplied to Fort Campbell via two 69 kV transmission lines, each having a capacity of 83 kV ampere. Each individual line has sufficient capacity to power Fort Campbell during peak demand periods. Fort Campbell is contractually limited with Tennessee Valley Authority to a peak demand of 62 MW.

Natural Gas. The natural gas distribution system is privatized at Fort Campbell and is owned by Clarksville Gas and Water Department. This system distributes natural gas throughout the cantonment area.

4.4.6.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, no change in energy demand or usage is anticipated. Fort Campbell would continue to implement energy saving programs and projects that support the Army's long-term energy reduction goals. No new energy infrastructure would be required.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

A decrease in troop strength would be beneficial to energy demand and generation. Reduction in Soldier strength would result in a proportionate reduction in overall Fort Campbell energy consumption. With a total full time population of more than 39,000 full time civilian and military employees, a force reduction of up to 8,000 Soldiers could reduce energy consumption by almost 20 percent of the installations current usage, particularly if the Fort Campbell continues to aggressively pursue energy efficiency and conservation measures.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Minor impacts to energy demand and generation are anticipated as a result of implementation of Alternative 2. An addition of up to 3,000 Soldiers may require minimal new electrical and natural gas infrastructure construction to support the associate space requirements. Energy demand requirements are anticipated to increase slightly as a result of the implementation of this alternative.

4.4.7 Traffic and Transportation

4.4.7.1 Affected Environment

The ROI for this Proposed Action includes Fort Campbell, Christian and Trigg counties in Kentucky, and Montgomery and Stewart counties in Tennessee. The largest cities within the ROI are Clarksville, Tennessee, Hopkinsville, Kentucky and Oak Grove, Kentucky, which are adjacent to Fort Campbell's eastern boundary. Other communities adjacent to Fort Campbell include Dover in Tennessee and Lafayette, Pembroke and Cadiz in Kentucky.

Fort Campbell is easily accessible by highway from generally every area in the mid-western and southeastern U.S. I-24 is located a short distance north and east of the installation. U.S. Route 41A runs north and south along the eastern boundary of the installation, and U.S. Route 79 runs east and west along the southern boundary. There are no waterways or maritime shipping at this installation. Due to recent community development projects on or near the installation, the Regional Planning Commission concluded a likely increase in traffic levels at Fort Campbell would exceed the current threshold and warrant further analysis and growth master planning.

4.4.7.2 Environmental Consequences

No Action Alternative

No changes in current installation traffic and transportation conditions are anticipated under the No Action Alternative. Fort Campbell and its ROI would continue to experience the current levels of service on existing roadways and at installation ACPs.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

A reduction of up to 8,000 Soldiers would have beneficial impacts on existing traffic and transportation conditions. A reduction of this magnitude would significantly decrease traffic congestion within the cantonment area and ROI road network resulting in safer shorter commutes with a decreased potential of vehicle accidents and delays on post and at installation ACPs.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

An increase of up to 3,000 Soldiers and their Family members would have significant but mitigable short- and long-term environmental impacts on traffic and transportation systems on the installation. Mitigations projects to ease traffic congestion at key intersections and points of congestion would be needed to reduce traffic impacts. A large percentage of the (incoming) unit's married population and unmarried Soldiers would likely reside in off-post housing. Spread across the (four-county) ROI, this population increase would have minimal impact on the transportation network of the neighboring communities. The additional off-post population; however, would contribute to increased traffic congestion on the roads leading to the installation's cantonment area, particularly during peak morning and evening hours. The increased population would greatly affect traffic congestion on the installation's transportation system and could lead to a decrease in LOS on post and increased delays at installation access points. Based upon the 2009 Fort Campbell Traffic Study, an increase in population of 3,000 Soldiers and their dependents cannot be supported without upgrades in road infrastructure to reduce on-post congestion.

4.4.8 Cumulative Effects

Region of Influence

The ROI for this cumulative impact analysis consists of the four counties within which Fort Campbell is located. Clarksville, Tennessee and Hopkinsville, Kentucky are the largest cities within the ROI. Clarksville is the center for commercial manufacturing, transportation, and medical activities in the area. Fort Campbell has long been a key component of the economy of the regional area, employing several thousand Soldiers and civilian employees within the ROI. Fort Campbell has been in operation supporting the Army since 1942.

There are numerous planned or proposed actions within the ROI that have the potential to cumulatively add impacts to Army Force 2020 alternatives. These actions are either in progress or reasonably could be initiated within the next 5 years. A number of the Army's proposed projects have been previously identified in the installation's Real Property Master Planning Board and are programmed for future execution. A list of projects below presents some of the projects which may add to the cumulative impacts of the implementation of Army 2020 realignment alternatives.

Fort Campbell Projects (Past, Present, and Reasonably Foreseeable):

- ***Force Structure Modifications and Growth.*** The Army completed a programmatic EIS (PEIS) in support of the Army's Growth and Force Structure Realignment in 2007. Fort Campbell troop strength increased by 3,500 Soldiers starting in 2008 and ending in 2010. Several future minor stationing actions are planned at Fort Campbell. These actions, although are additions to the existing force, are considered minor in nature. Force structure modifications are typically unit specific and may include reductions or increases in troop strength. Force structure modifications planned for the future are:
    - FY 2007/2008 Force Structure Modifications (increase of 1,707 personnel);
    - FY 2009 Force Structure Modifications (increase of 70 personnel);
    - FY 2009/2011 160th Special Operations Aviation Regiment Force Structure Modifications (increase of 326 personnel);
    - FY 2010 Force Structure Modifications (increase of 7 personnel);
    - FY 2011 Force Structure Modifications (decrease of 48 personnel);
    - FY 2012 Force Structure Modifications (decrease of 91 personnel);
    - FY 2012 USAR Stationing Action (increase of 12 personnel);
    - FY 2013 Force Structure Modifications (decrease of 400 personnel);
    - FY 2014 Force Structure Modifications (decrease of 215 personnel); and
    - FY 2014 160th Force Structure Modifications (increase of 340 personnel).
- ***Military Construction Projects.*** Construction in support of the Army's Growth and Force Structure Realignment (2008-2012) is nearing completion. Construction costs to support the Army's needs exceeded $800 million. Minimal future construction is anticipated to support the needs of Fort Campbell. Major construction projects from the past 2 years (some of which are ongoing) are listed below in Table 4.4-13. A majority of construction projects supporting the Grow the Army initiative were completed between 2008 to 2010.

1 **Table 4.4-13. Past, Present, and Future Major Construction Projects**

Year	Project Title
FY 2011	Echelon Above Brigade Complex
FY 2011	New Clarksville Base, Phase 3
FY 2011	New Clarksville Base, Phase 4
FY 2011	BCT 1 Complex (TEMF)
FY 2011	BN and CO Ops Complex Ph 5 (5th SFG)
FY 2011	Urban Assault Course
FY 2011	SOF Rapelling Training Area
FY 2011	UMMCA Fire Training and Rescue Facility
FY 2011	Automated Sniper Field Fire Range
FY 2012	TEMF, 101 CAB
FY 2012	Sustainment Brigade Complex (Vehicle Maintenance Facility)
FY 2012	Clarksville Base Physical Fitness Facility
FY 2012	Barracks (EAB - 528 spaces)
FY 2012	Scout/Recce Gunnery Range
FY 2012	Barracks (5th SFG / 160th SOAR - 244 spaces)
FY 2012	UAS (160th SOAR)
FY 2012	MH47 Aviation Facility (160th SOAR)
FY 2012	Addition and Alteration to Blanchfield Army Community Hospital
FY 2012	TEMF, 101 CAB
FY 2013	Division (UEx) Barracks Complex
FY 2013	UAS (160th SOAR)
FY 2013	Live-Fire Shoothouse
FY 2013	Landgraf Hangar 7264 Extension (160th SOAR)
FY 2013	5th SFG GSTB and GSB Detachment
FY 2013	Barkley Elementary School
FY 2014	GSTB (5th SFG)
FY 2014	Wassom Middle School
FY 2014	Fort Campbell High School
FY 2014	Marshall Elementary School
FY 2014	18th Weather Squadron
FY 2014	19th ASOS Complex Air Force
FY 2015	TEMF - 101st CAB
FY 2015	101 CAB UAS (Sabre)
FY 2015	SIMO Building (160th SOAR)
FY 2015	Jackson Elementary School
FY 2016	Infantry Platoon Battle Course
FY 2016	Lincoln Elementary School
FY 2016	Replace Kentucky DSO
FY 2016	Logistic Support Facility (160th SOAR)
FY 2017	Multi-Purpose Machine Gun Range
FY 2017	Mahaffey Middle School Replacement

Other Agency (DoD and non-DoD) Actions (Past, Present, and Reasonably Foreseeable)

- Tennessee Valley Authority (TVA) Oakwood Switching Station and Transmission Line (2007). TVA constructed a 161-kV substation and transmission line to provide more reliable electrical service to the region.
- Expansion of U.S. Highway 79 in Montgomery and Stewart counties, Tennessee (2008). This regional project expanded the highway from two to four lanes to increase traffic flow and provide Fort Campbell with a definitive southern boundary. The development provided the region with increases commerce opportunities.

Fort Campbell is not aware of other future non-DoD Agency plans for the region.

Fort Campbell anticipates a range of cumulative effects resulting from the implementation of the Proposed Action and alternatives. Cumulative impacts for each alternative are:

No Action Alternative

Beneficial through minor adverse cumulative impacts would be anticipated from implementing the No Action Alternative. Under the No Action Alternative, no changes in military authorizations, or local environmental conditions would be anticipated. Installation facility shortages and excesses would remain at their currently planned levels without additional stationing or force reductions. The Army would continue to implement some facilities reductions of outdated/unused facilities. Under the No Action Alternative, no more than minor impacts would be anticipated for all VECs.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Cumulative impacts as a result of the implementation of Alternative 1 range from beneficial impacts to Significant. The following VEC areas are anticipated to experience either negligible or beneficial impacts as a result of the implementation of Alternative 1. These are: air quality, airspace, cultural resources, noise, soil erosion, biological resources, wetlands, water resources, facilities, energy demand and generation, land use, hazardous materials and hazardous waste, and traffic and transportation. The reduction of Soldiers on Fort Campbell would result in less training and a reduced frequency of garrison environmental support activities. When viewed in conjunction with other past, present and reasonably foreseeable projects, the overall cumulative effect of Alternative 1 are projected to be either beneficial or no more than minor adverse impacts. Discussion of cumulative impacts to VEC areas are below:

- ***Air Quality.*** Cumulative impacts of Alternative 1 are anticipated to lead to negligible adverse impact regional air quality. Current installation air emissions are well below limits agreed upon between Fort Campbell and the states of Kentucky and Tennessee. Minimal impacts on NAAQS from both stationing alternatives are anticipated even when considering traffic and transmission projects occurring in the ROI.
- ***Airspace.*** Impacts associated with Alternative 1 would have no effect on the existing airspace. No addition or reduction in current aviation assets would occur as a result of any of the alternatives considered. Only negligible increase or decrease in UAS training may occur, if there were any change at all in airspace use requirements.
- ***Cultural Resources.*** Cumulative impacts associated with Alternative 1 are not anticipated to adversely impact cultural resources. Existing protocols and procedures for site placement at Fort Campbell make the unintentional damage of a historic property, either through demolition or construction, unlikely. Fort Campbell periodically monitors significant archaeological sites and known prehistoric burials for compliance with the ARPA and NAGPRA. It is anticipated that transmission and road projects occurring in

the area would follow management procedures to identify and reduce potential impacts to cultural resources.

- ***Noise.*** Impacts associated with Alternative 1 are not anticipated to have adverse noise impacts on the region. The NZs impacted from air traffic (general purpose and attack helicopters) are already heavily trafficked and would not see a major increase in use or operations. The installation already has mitigations in place to help reduce current noise. Installation noise, in conjunction with noise from other projects discussed above, would be projected to result in negligible cumulative environmental impacts.
- ***Soil Erosion.*** Impacts associated with Alternative 1 are considered to be beneficial to natural resources on the installation. The reduction in troop strength would reduce the total off-road maneuver days which would reduce the overall installation erosion potential. A reduction in soil loss potential would also reduce the rehabilitation and maintenance costs associated with off-road activities. There would be minor to moderate impacts to soils from transmission and roads projects in the ROI, however.
- ***Biological Resources.*** Impacts associated with Alternative 1 would not adversely impact endangered species or their habitat. The installation has developed an Endangered Species Management Component in coordination with the USFWS and coordinates all activities that may have an adverse impact with the USFWS. Management controls are in place to reduce the chance of a violation.
- ***Wetlands.*** No impacts to installation wetlands are anticipated as a result of the implementation of Alternative 1. Wetlands are designated as non-training areas and Soldiers are provided instruction on authorized activities around wetland areas through the Directorate of Plans, Training, Mobilization, and Security, Range Division, ITAM program. Fort Campbell proactively monitors wetland areas and ensures that required training does not impact wetlands areas.
- ***Water Resources.*** Beneficial impacts to water resources are anticipated from implementation of Alternative 1. Long-term reductions in water consumption as well as requirements for water treatment are anticipated. The potential reduction of off-road maneuver days may reduce the potential for sediment runoff and increase surface water quality.
- ***Facilities.*** Impacts associated with Alternative 1 are anticipated to be beneficial to the installation. A reduction in troop strength would provide the installation the opportunity to re-purpose selected facilities and demolish selected World War II wooden facilities. The reduction in facility numbers may provide increased energy efficiency, green space, and minimize the cantonment area footprint on Fort Campbell.
- ***Energy Demand and Generation.*** Implementation of Alternative 1 would provide beneficial effects to energy consumption on the installation and the region. Reduction in Soldier strength would result in a proportionate reduction in overall Fort Campbell energy consumption. This would provide a potential reduction in regional environmental impacts associated with energy production.
- ***Land Use Conflict and Compatibility.*** No significant impacts to existing land uses on and around the installation are anticipated from impacts associated with Alternative 1. Although Fort Campbell has a training land deficit, the installation Range Division has the capability to schedule multiple activities within the training lands to meet the requirements of the Proposed Action. A reduction in troop strength would not alter existing land use nor cause compatibility issues with adjacent land uses.
- ***Hazardous Material and Hazardous Waste.*** Impacts associated with Alternative 1 would not negatively impact the current hazardous waste handling capabilities on Fort

Campbell. Increased generation of hazardous materials used, stored, and handled may occur from increased levels of facilities demolition; however, existing procedures, regulations, and facilities are able to meet storage, use, and handling requirements. Adequate hazardous waste disposal facilities are available to manage an increase in hazardous waste.

- ***Traffic and Transportation.*** Implementation of Alternative 1 in conjunction with lane widening occurring on the South side of the installation, would provide beneficial impacts on existing traffic and transportation conditions. A reduction of this magnitude would significantly decrease traffic congestion within the cantonment area and ROI road network resulting in safer commutes with a decreased potential of vehicle accidents. Although the community of Clarksville continues to grow, the reduction in the number of vehicles utilizing the regional road network may provide some road maintenance relief for the surrounding counties.

As a result of Alternative 1, the Army anticipates significant cumulative adverse impacts to regional socioeconomics.

- ***Socioeconomics.*** In addition to the impacts described in Section 4.4.5.2, the cumulative socioeconomic impact within the ROI under Alternative 1 would be a significant adverse impact on the regional economy. Regionally, off-post unemployment has risen from 5.0 percent to 8.2 percent within the ROI from 2005 to 2012. Other actions, such as reduction in employment opportunities on the installation have contributed to a decline in employment within the ROI. A reduction of 8,000 Soldiers in conjunction with these actions would cumulatively have a negative impact on the regional local economy. Nationally, unemployment has been trending lower since 2010. In April 2010, the national unemployment rate was 9.9 percent and as of October 2012 it was reported as 7.8 percent (Bureau of Labor Statistics, 2012). Under Alternative 1, the loss of 8,000 Soldiers in conjunction with other reasonably foreseeable proposals would have a significant adverse impact to the ROI. Other than Fort Campbell, there are limited employment -based options upon which the community can rely meaning that the job loss cannot be absorbed by other employment sectors such as the case in more urban areas. In addition, adverse impacts to multiple regional community services and schools would be anticipated because they receive funding, support, time, donations, and tax revenue directly related to the number of military authorizations and their dependents.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Cumulative impacts are projected to range from beneficial to significant but mitigable impacts. The following VEC areas are anticipated to experience either no impact or minor cumulative impact as a result of the implementation of Alternative 2. These VECs are: air quality, airspace, cultural resources, noise, soil erosion, biological resources, wetlands, water resources, socioeconomic, energy demand and generation, land use, hazardous materials and hazardous waste.

- ***Air Quality.*** Less than significant cumulative impacts are anticipated within the ROI. Additional emissions from the implementation of Alternative 2 at Fort Campbell, in conjunction with the construction of additional facilities, transmission, and roads projects discussed in this section are not anticipated to result in significant cumulative impacts. Air quality would be adversely impacted by an increase in O_3, PM, and fugitive dust, throughout the airshed to less than significant levels. The region would be projected to remain in attainment for these CAPs.

- ***Airspace.*** Impacts associated with Alternative 2 are not anticipated to negatively affect the existing airspace. No addition or reduction in current aviation assets would occur as a result of Alternative 2. Only negligible increase in UAS training would occur, if there were any change at all in airspace use requirements.
- ***Cultural Resources.*** Impacts associated with Alternative 2 are not anticipated to adversely impact cultural resources. Existing protocols and procedures for site placement at Fort Campbell make the unintentional damage of a historic property, either through demolition or construction, unlikely. Fort Campbell periodically monitors significant archaeological sites and known prehistoric burials for compliance with the ARPA and NAGPRA. Highway improvements and the construction of transmission lines by TVA may disturb some cultural resources, but surface surveys should assist in the avoidance of impacts to eligible cultural resources.
- ***Noise.*** Impacts associated with Alternative 2 are not anticipated to have adverse noise impacts on the region. The NZs impacted from air traffic (general purpose and attack helicopters) are already heavily trafficked and would not see a major increase in use or operations. The installation already has mitigations in place to help reduce current noise. Noise from training may have an additive effect when considering noise from road construction on the south side of post, but noise impacts would remain cumulatively, less than significant.
- ***Soil Erosion.*** Impacts associated with Alternative 2 are anticipated to be minor to soils on the installation. The installation has implemented protocols and procedures to identify and repair areas of erosion on the installation. The Installation Range Division actively inventories and rehabilitates areas impacted by military training activities to ensure minimal environmental impacts due to training. These impacts would be cumulatively less than significant when considering the environmental impacts of road and electrical transmission projects. Proper procedures to cover exposed soils and limit soil erosion would be implemented to limit soil erosion.
- ***Biological Resources.*** Impacts associated with Alternative 2 or other projects discussed above would not adversely impact endangered species or their habitat. The installation has developed an Endangered Species Management Component in coordination with the USFWS and coordinates all activities that may have an adverse impact with the USFWS. Management controls are in place to reduce the chance of a violation.
- ***Wetlands.*** No impacts to installation wetlands are anticipated as a result of the implementation of Alternative 2 in conjunction other projects evaluated as part of the cumulative effects analysis. Wetlands are designated as non-training areas and Soldiers are provided instruction on authorized activities around wetland areas through the Directorate of Plans, Training, Mobilization, and Security, Range Division, ITAM program. Fort Campbell proactively monitors wetland areas and ensures that required training does not impact wetlands areas.
- ***Water Resources.*** Minor impacts to water resources are anticipated from implementation of Alternative 2. Fort Campbell streams have been designated as impaired by sediment from the Tennessee Department of Environment and Conservation and placed on the EPA's 303(d) list. Increases in Soldier strength could potentially decrease water quality through increased sedimentation from soil erosion caused by off-road maneuvers. Further deterioration of water quality would likely have a negative impact on regional water quality. Internal controls are in place to minimize the impacts to surface waters although installation costs to minimize impacts may be

greater. When considering other soil disturbing projects in the ROI, overall cumulative impacts to surface waters through sedimentation would be less than significant.

- ***Socioeconomics*.** Implementation of Alternative 2 would result in the gain of up to 3,000 military personnel, with an average annual basic income of $41,830. The addition of up to 3,000 Soldiers at Fort Campbell combined with indirect employment opportunities created by increased demand for goods and services, would beneficially affect employment in the region. Tax revenues would increase proportionally, especially through sales taxes. There would be no significant socioeconomic impacts for this alternative.
- ***Energy Demand and Generation*.** Impacts associated with Alternative 2 are anticipated to be minor. An addition of up to 3,000 Soldiers may require minimal new electrical and natural gas infrastructure construction to support the associate space requirements. Energy demand requirements are anticipated to increase slightly as a result of construction of facilities to support the implementation of this alternative.
- ***Hazardous Material and Hazardous Waste.*** Impacts associated with Alternative 2 would not negatively impact the current hazardous waste handling capabilities on Fort Campbell. Materials used, stored, and handled may increase; however, existing procedures, regulations, and facilities are able to meet storage, use, and handling requirements. Adequate hazardous waste disposal facilities are available to manage an increase in hazardous waste.
- ***Facilities*.** Less than significant impacts to facilities and infrastructure are anticipated from implementation of Alternative 2. Increases in infrastructure requirements are anticipated as a result of Alternative 2. The addition of 3,000 Soldiers would require new MILCON to support this alternative, as the current facilities shortfall for existing units is pervasive and would not permit additional sharing of facilities to meet the mission requirements of new units. Very limited administrative and billet space is available to support an additional 3,000 Soldiers as a result of this alternative. An increase in Soldier strength would potentially lead to new developments outside the installation boundary to accommodate this level of growth, resulting in a greater degree of encroachment above which the installation is already experiencing.
- ***Traffic and Transportation*.** An increase of up to 3,000 Soldiers and their family members would have significant but mitigable short- and long-term environmental impacts on traffic and transportation systems on the installation. Mitigation projects to ease traffic congestion at key intersections and points of congestion would be needed to reduce traffic impacts. A large percentage of the (incoming) unit's married population and unmarried Soldiers would likely reside in off-post housing. Spread across the (four-county) ROI, this population increase would have minimal impact on the transportation network of the neighboring communities. The additional off-post population; however, would contribute to increased traffic congestion on the roads leading to the installation's cantonment area, particularly during peak morning and evening hours. The increased population would greatly affect traffic congestion on the installation's transportation system and could lead to increased delays at installation access points. Based upon the 2009 Fort Campbell Traffic Study, a 3000 Soldier increase in population cannot be supported without upgrades in installation road infrastructure. Additional traffic project improvements, in addition to lane widening occurring to the South of the installation, would be needed to reduce congestion.

4.5 FORT CARSON, COLORADO

4.5.1 Introduction

Fort Carson, located in central Colorado, has approximately 90,000 acres of maneuver area suited for vehicle and non-vehicular military training (Figure 4.5-1). It has long supported armored/mechanized unit training and dismounted infantry unit training.

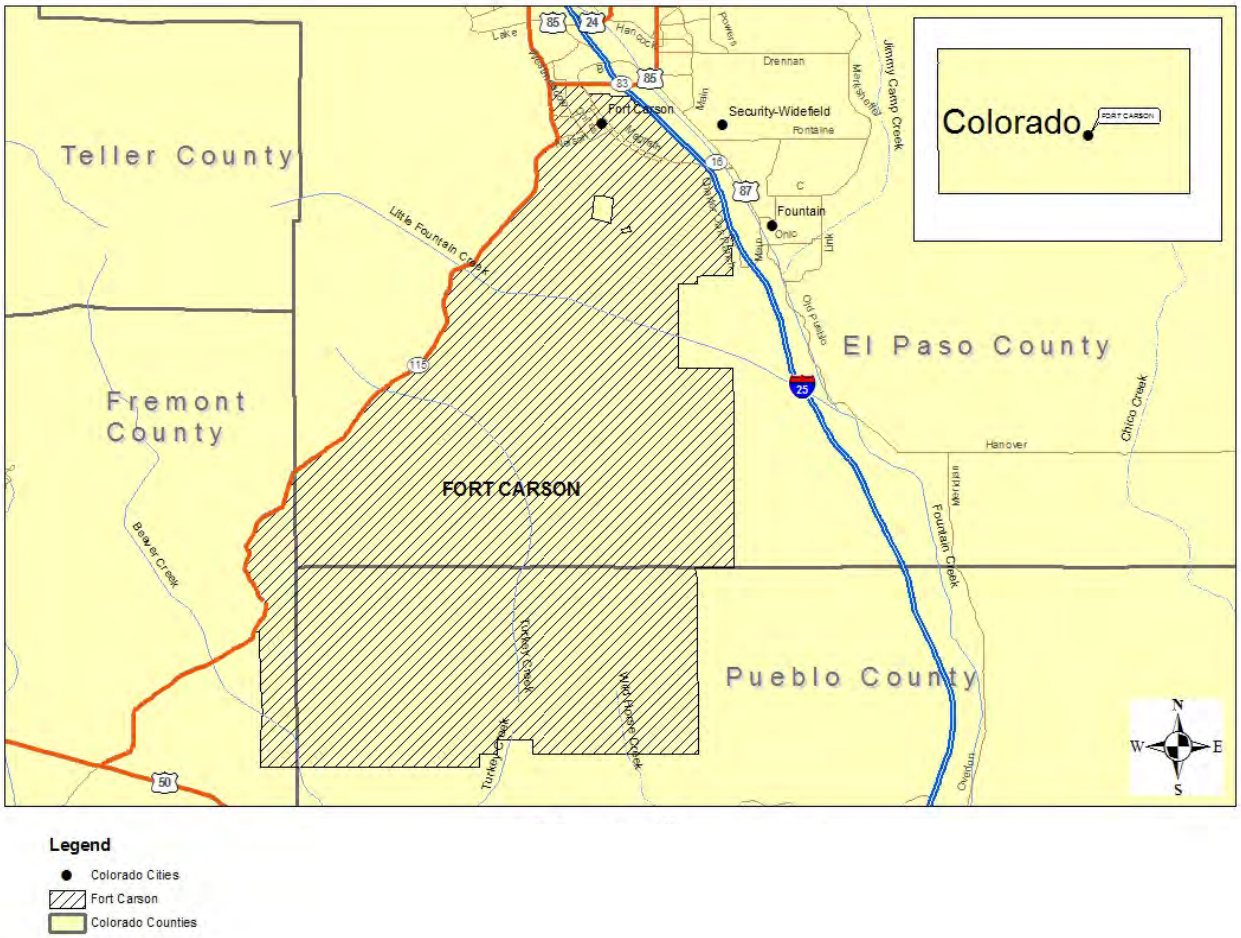

Figure 4.5-1. Fort Carson

Currently, the major units stationed at Fort Carson include the 4th Infantry Division; the 10th Combat Support Hospital; the 43rd SUSBDE, the 10th SFG (Airborne); the 4th and 52nd Engineer Battalions; the 759th Military Police Battalion; and the 71st Explosive Ordnance Detachment Group. Fort Carson possesses a well-developed range infrastructure designed to support both conventional Army and Special Forces units. Piñon Canyon Maneuver Site (PCMS) is a satellite maneuver training area which is primarily used to meet the maneuver training requirements of units stationed at Fort Carson. Potential impacts to resources at PCMS resulting from training of newly stationed units at Fort Carson are evaluated in this section along with the projected impacts to Fort Carson.

4.5.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Carson does not anticipate any significant adverse environmental impacts as a result of

Alternative 1 (Force reduction of up to 8,000 Soldiers and Army Civilians) or Alternative 2 (Installation gain of up to 3,000 Soldiers). However, Fort Carson anticipates significant socioeconomic impacts to economic activity and population as a result of Alternative 1. Tables 4.5-1 and 4.5-2 summarize the anticipated impacts to VECs from each alternative at Fort Carson and the PCMS.

Table 4.5-1. Fort Carson Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 8,000	Alternative 2: Growth of up to 3,000
Air Quality	Less than Significant	Beneficial	Significant but Mitigable
Airspace	Negligible	Beneficial	Less than Significant
Cultural Resources	Negligible	Beneficial	Minor
Noise	Negligible	Beneficial	Minor
Soil Erosion	Less than Significant	Beneficial	Significant but Mitigable
Biological Resources	Negligible	Beneficial	Less than Significant
Wetlands	Minor	Beneficial	Minor
Water Resources	Minor	Beneficial	Minor
Facilities	Minor	Beneficial	Significant but Mitigable
Socioeconomics	Negligible	Significant	Beneficial
Energy Demand and Generation	Negligible	Beneficial	Minor
Land Use Conflict and Compatibility	Negligible	Negligible	Minor
Hazardous Materials and Hazardous Waste	Minor	Beneficial	Minor
Traffic and Transportation	Less than Significant	Beneficial	Significant but Mitigable

Table 4.5-2. Piñon Canyon Maneuver Site Valued Environmental Components Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 8,000	Alternative 2: Growth of up to 3,000
Air Quality	Minor	Beneficial	Less than Significant
Airspace	Negligible	Beneficial	Minor
Cultural Resources	Negligible	Beneficial	Minor
Noise	Negligible	Beneficial	Minor
Soil Erosion	Less than Significant	Beneficial	Significant but Mitigable
Biological Resources	Negligible	Beneficial	Less than Significant
Wetlands	Negligible	Beneficial	Negligible
Water Resources	Negligible	Beneficial	Minor
Facilities	Negligible	Negligible	Negligible
Socioeconomics	Negligible	Negligible	Negligible
Energy Demand and Generation	Negligible	Negligible	Negligible
Land Use Conflict and Compatibility	Negligible	Negligible	Negligible
Hazardous Materials and Hazardous Waste	Minor	Beneficial	Minor
Traffic and Transportation	Negligible	Beneficial	Negligible

4.5.2 Air Quality

4.5.2.1 Affected Environment

Fort Carson

Fort Carson is within the air quality control areas of El Paso, Fremont, and Pueblo counties, including the City of Colorado Springs. Both Fremont and Pueblo counties are in attainment for all criteria pollutants. The City of Colorado Springs in El Paso County is in attainment (meeting air quality standards) for all NAAQS criteria pollutants. It was classified; however, as a maintenance area for CO in 1999 due to a 1988 violation of the 8-hour CO standard. This CO maintenance area includes the majority of Fort Carson's main post area (north of Titus Boulevard and Specker Avenue). This designation is currently set to run through 2019 (CDPHE, 2009). In December 2009, the Colorado Department of Public Health and Environment (CDPHE) approved Revised Carbon Monoxide Attainment/Maintenance Plan, Colorado Springs Attainment/Maintenance Area, the most current SIP for the maintenance area (CDPHE, 2009). In the future, this area may become part of an O_3 non-attainment area. Local O_3 monitors show violation of the proposed 2010 standards. The proposed 2010 standards are more stringent

than the current standard. The federal government will wait until 2013 to decide to implement the 2010 standard. Additionally, the federal government will scrutinize NO_x and VOC emissions to ensure future compliance with the general conformity rule, if the 2010 standard is implemented.

Fort Carson stationary and fugitive emission sources, in general, include boilers, high temperature hot water generators, furnaces and space heaters, emergency generators, paint spray booths, fuel storage and use operations, facility-wide chemical use, road dust, military munitions, and smokes and obscurants. The Army is also considering the construction of a central power plant at Fort Carson to provide the installation with a cleaner more secure energy supply to support future operations. Fort Carson's air pollutant emissions generation occurs through the combustion of fossil fuels via equipment such as boilers (a stationary source) and motorized vehicles (a mobile source). Combustion products mainly include GHGs (calculated as carbon dioxide equivalent (CO_2e), CO; NO_x; sulfur dioxide (SO_2); PM, PM_{10} and PM smaller than 2.5 micrometers ($PM_{2.5}$). In addition to fuel combustion emissions generated by the use of unpaved roads generates PM_{10}. Another contributing source of emissions at Fort Carson is the firing of munitions. This activity contributes to the criteria pollutants detailed above and trace amounts of lead emissions. In 2010, the ambient air emissions standard for lead was lowered from 1 tpy to 0.5 tpy. The EPA found Fort Carson emits too little lead to further investigate the potential of Fort Carson exceeding the new lead standards.

Fort Carson manages its air emissions per regulatory requirements, management plans, and BMPs. Key among these is its Title V operating permit (No. 95OPEP110). This type of permit is required of facilities located in an attainment area with the potential to emit (i.e., the maximum emissions a facility could emit given physical, enforceable, and permitting constraints) more than 100 tpy of a criteria pollutant. A Title V permit regulates the amount of pollutants from significant emission sources in various ways, depending on the source type (e.g., restricting operating hours, fuel type, throughput amount, and emission rates). As a Title V source, Fort Carson must submit a permit application for renewal every 5 years. The Title V Permit Renewal Application package was completed and submitted to the CDPHE on June 30, 2011 to renew the installations Title V permit. For new sources construction on site after issuance of the Title V Permit a permit modification application is due to the state within a year of construction.

Any net increase of criteria pollutants that would result in a "major modification" would subject Fort Carson to the PSD review requirements (40 CFR 52.21). Should Fort Carson make changes that increase their stationary plus mobile CO emissions within Fort Carson's CO maintenance area, Fort Carson may have to limit CO emissions to show conformity.

As part of Fort Carson's Title V operating permit, the installation is permitted as a minor (area) source of HAPs as it does not emit more than eight tons of any single HAP (of 186 regulated HAPs) or 20 tons of total HAPs per year.

To aid compliance with the Title V permit, Fort Carson has implemented a number of BMPs. These plans include Dust Management Plan, Ozone Depleting Compounds Plan, Paint Booth Operating Plan and Prescribed Burning Plan. The burning plan expires in 2013; the dust management plan was implemented in 2005.

Also of note, the Title V permit limits use of smoke munitions and the generation of fog oil smoke for training exercises, activities that are typically unique to the military.

Fort Carson's predominant stationary Scope 1 GHG emission sources are on-post boilers. Scope 2 includes emissions from utilities in providing power to Fort Carson. In 2008, the Army estimated these emissions (Scope 1 and Scope 2) to be about 100,000 tons CO_2e per year. These represent circa 0.000015 percent of total U.S. emissions.

The GHG reporting rule, published in October 2009 and most recently amended in November 2010, requires major emitters of GHGs (i.e., carbon dioxide (CO_2) and others) to collect and report GHG emissions data to the EPA. The GHG reporting rule is codified in the CFR in 40 CFR 98.

Fort Carson is required to report GHG emissions, because the aggregate maximum rated heat input capacity of the facility's stationary fuel combustion units is equal to or greater than 30 million British thermal units per hour, and Fort Carson's GHG emissions are over 25,000 metric tons of CO_2e. This applicability is based on 40 CFR 98.2 (a)(3).

Specifically, Fort Carson is required to report emissions of three GHGs - CO_2, methane (CH_4), and nitrous oxide (N_2O) - from stationary combustion sources on an annual basis. This is based on 40 CFR 98.32.

The GHG report is due annually on March 31 of each year for the previous calendar year (40 CFR 98.3 (b)), beginning March 31, 2011 for calendar year 2010. The calendar year 2010 CO_2e reported to the EPA was 65,402 tons.

Piñon Canyon Maneuver Site

At the PCMS vehicle exhaust is the major source for VOCs, NO_x, and SO_2. The permitted air sources at PCMS include two emergency generators, a fuel loading rack and associated fuel storage tank, and smoke and obscurant usage (identical to the smoke and obscurant usage at Fort Carson). Combustion from wildfires is the major source for CO, and fugitive dust from unpaved roads is the major source for PM_{10}.

The surrounding air quality region is classified as being in attainment for all criteria pollutants. Currently, there is no requirement for PSD analysis for PCMS because it is located in an attainment area and it is not a major source of air pollutants under the provisions of the CAA.

Prescribed Burn Permits. In addition to PCMS acreage being managed by Fort Carson, the Fort Carson Fire and Emergency Services Prescribed Fire Plan addresses PCMS as well. Fort Carson is divided into three quadrants, and its fourth quadrant is PCMS. In addition to the required notifications to the Air Pollution Control Division prior to and after a burn, Fort Carson Fire Department personnel notify the appropriate personnel in Las Animas County. Controlled burns are used to minimize the risk of large fires by reducing fuel loads and breaking up the continuity of fuels. Prescribed burning targets areas with heavy fuel buildups that are the most likely to ignite from range operations. A Prescribed Burn Planning Document is submitted to meet the requirements of Air Quality Control Commission Regulation No. 9, Open Burning, Prescribed Fire and Permitting, and procedures within the INRMP are followed for each prescribed burn event. This activity is responsible for the majority of PCMS's CO emissions.

4.5.2.2 Environmental Consequences

Fort Carson

No Action Alternative

There would continue to be less than significant short- and long-term fugitive dust impacts from training and emissions from mobile and stationary sources required to support installation operations and training. These impacts would not exceed threshold levels at Fort Carson. Permit conditions would continue to be monitored and met, but no changes to emission sources are anticipated, other than those mandated by maintenance, replacement, or elimination of sources as they age or are removed from service.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

There would be an anticipated beneficial impact to regional air quality from reduced numbers of mobile emission sources, as well as reduced usage of existing stationary sources. There would be less combustion and generation of NAAQS regulated pollutants and HAPs associated with military training. In addition there would be less fugitive dust generated from fewer training events. The reduction in off-post traffic and mobile source emissions as a result of the implementation of Alternative 1 would reduce the risk of exceeding regulatory thresholds.

Long-term beneficial impacts are anticipated from the decreased use of tactical mobile sources, as resulting from decreased training exercises. Tactical mobile sources and the associated training activities have the potential to result in beneficial impacts to air quality from decreased emissions of fugitive dust (PM) from unpaved roads and vehicle exhaust.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be a significant but mitigable adverse impact on air quality in the airsheds surrounding Fort Carson as a result of the implementation of Alternative 2. There would be an anticipated increase in air emissions from both mobile and stationary sources that would be generated to support additional Soldiers and their Families. The limits of the permit would not be exceeded, however. Any new sources (boilers/generators) would be permitted with CDPHE and incorporated into the Title V Permit.

Mobile source emissions are anticipated to increase on the installation and the surrounding area due to the influx of Soldiers and their Families. Vehicles traversing I-25, located on the eastern edge of the installation, are also a contributor to mobile source emissions in surrounding area. Infrastructure upgrades required to support the influx of Soldiers and their Families are anticipated to result in an increase of combustion emissions from stationary sources.

Fugitive dust emissions remain a concern and any increased emissions would add to the measures the installation already implements for fugitive dust emissions. If the installation were to receive a gain in Soldiers as a result of Headquarters, DA stationing decisions as a result of Alternative 2, the installation would need to re-evaluate the Fugitive Dust Plan to ensure the fugitive dust and opacity requirements, as defined by CDPHE, are adhered to. This would include implementation of BMPs such as dust suppressant applications and reduced vehicle speed on unpaved surfaces. With BMPs currently in place to reduce opacity and fugitive dust, impacts would be less than significant.

Piñon Canyon Maneuver Site

No Action Alternative

There would continue to be minor short- and long-term fugitive dust impacts from training and emissions from mobile and stationary sources required to support PCMS operations and training. These impacts would not exceed threshold levels at PCMS. Air quality would continue to be monitored, but no changes to emission sources are anticipated.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Long-term minor (low) beneficial impacts to air quality are anticipated for training activities as a result of the implementation of Alternative 1. Reduction of 8,000 Soldiers at Fort Carson that would train at the PCMS would decrease off-road activity and fugitive dust emissions at PCMS. Air quality emissions from mobile sources would also be anticipated to decrease as a result of this alternative.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Due to PCMS's topography, semi-arid climate conditions, soil types, and training requirements, short-term minor impacts to air quality would be anticipated from an increase in number of vehicles training at PCMS. Fort Carson leadership has made the decision that training at PCMS will not exceed the 4.7 months of mechanized maneuver training. This level of training was first analyzed and adopted when the training land at PCMS was acquired. Stationing of additional Soldiers at Fort Carson would not require the exceedance of this training threshold at PCMS. Stationing at Fort Carson; however, could increase the number of vehicles training at PCMS (intensity of use) during training rotations if additional units are added to the structure of BCTs. This increase in intensity of use could lead to increased generation of fugitive dust and PM from addition mounted maneuvers on unpaved roads and trails and from training with smoke and obscurants from an increased number of vehicles using PCMS during BCT training rotations. Any impacts as a result of implementation of the Proposed Action would be mitigable to a level that would be less than significant.

New stationary sources would not be constructed as a result of the implementation of Alternative 2 at PCMS. Additional changes are not anticipated to be needed for the few permitted sources at PCMS as they are operated well under their permitted capacity. The slight increase over the next few years for prescribed burn activities that currently occur are not related to the Proposed Action, as they are dependent on uncontrollable climate factors such as drought and meteorological conditions. The implementation of Alternative 2 would not add to air quality impacts at PCMS from prescribed burning, as these would occur regardless of unit stationing discussed as a result of this alternative. Alternative 2, however, would cause an increase in air quality impacts from the following activities related to increased training:

- Fugitive dust emissions from use of training ranges and maneuver areas (an increase in duration and frequency);
- Fugitive dust emissions from convoy travel along unpaved roads along boundary and in downrange areas; and
- Vehicle exhaust from convoy travel on paved roads between PCMS and Fort Carson.

The increase in convoy traffic between Fort Carson and PCMS would be on approximately 150 miles of paved public roads. The emissions resulting from the increase in convoys would be low, temporary, and dispersed over a great distance. The increases represent no more than 1 percent of total traffic and 10 percent of heavy vehicle traffic on the portions of road near the PM_{10} air monitors. PM_{10} is monitored in the Colorado Springs area and is representative of the ambient air conditions along the public road where convoy traffic is anticipated to occur. Currently, emissions from the average daily traffic do not cause exceedances of the 24-hour standard; therefore, any temporary incremental emission activity from the increased convoy transits is not anticipated to affect the current monitored compliance levels and would not result in adverse impacts to air quality.

4.5.3 Airspace

4.5.3.1 Affected Environment

Fort Carson

Fort Carson has 152 square miles of FAA-designated Permanent Restricted Use and SUA, up to but not including 60,000 feet AGL. The installation has access to this airspace with a 96 hour request through the FAA.

Fort Carson airspace includes helicopter, rotary- and fixed-wing, transient aircraft flights, UASs, parachute drops of equipment and personnel, high angle live fire, indirect fire, direct fire, surface-to-air and air-to-ground live fire. The U.S. Air Force, Air National Guard, U.S. Marines, Reserves and other federal agencies use the reservation's airspace. FAA and Fort Carson established permanent restricted airspace over the installation to prevent flights from unauthorized aircraft entry. Civilian aircraft are restricted from entry and military aircraft are permitted under closely coordinated and controlled conditions while firing of weapons, including artillery, mortar, and missile projectiles, is in process. Airspace adjacent to Fort Carson is used by commercial and military institutions (U.S. Army, 1995).

Aviation training ranges on Fort Carson consist of multiple air-to-ground integration live-fire ranges.

Piñon Canyon Maneuver Site

Currently, there is no restricted, military-controlled airspace over PCMS; however, there is a MOA for military training activities. Airspace at the PCMS is scheduled for use with the FAA and activated for helicopter exercises, parachute drops of equipment and personnel, small UAS training exercises, and tactical training for fixed-wing military aircraft. This MOA extends from 100 feet AGL to an altitude of 10,000 feet. Two commercial air routes exist at 30,000 feet in the airways above and adjacent to the maneuver site. There are no restricted designations for military or civilian use of airspace over the PCMS.

4.5.3.2 Environmental Consequences

Fort Carson

No Action Alternative

The No Action Alternative would have negligible impacts and would not produce any conflicts with overlying restricted airspace.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Airspace would not change significantly with the loss of ground units as a result of the implementation of Alternative 1. Long-term minor beneficial impacts to airspace use are anticipated. It is anticipated that the activities associated with a decrease of 8,000 Soldiers would moderately decrease activities requiring airspace within the main post and training and range areas. Aviation and UAS would continue to require airspace to support training. This implementation of Alternative 1 would not result in a decreased requirement for airspace, but rather result in slightly lower utilization and requirements for airspace use resulting from a slight reduction in UASs that are part of Army BCTs.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Short- and long-term impacts to airspace use are anticipated to be less than significant. An increase of Soldier strength by 3,000 would be reflected within the main post and increased usage of the training and range areas. This would be anticipated to further limit airspace availability for aviation and UAS training. Activities requiring airspace would be coordinated with existing mission activities to minimize live-fire training and aviation training conflicts and ensure required training events could occur.

Piñon Canyon Maneuver Site

No Action Alternative

The No Action Alternative would have negligible impacts and would not produce any conflicts with overlying restricted airspace.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

There would be minor beneficial impacts to airspace use resulting from a slight decrease in UAS use at PCMS. There would be no changes to current military operational airspace required as a result of the implementation of this alternative.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be minor impacts to airspace use resulting from a slight increase in UAS use at PCMS. There would be no changes to current military operational airspace required as a result of the implementation of this alternative.

4.5.4 Cultural Resources

4.5.4.1 Affected Environment

Cultural resources management on Fort Carson encompasses conservation of resources of significance to the history or prehistory of the U.S. and of traditional, religious, and cultural importance to Native Americans including those which have been formally designated as traditional cultural properties (TCPs) and/or sacred sites. The Army manages cultural resources associated with all major prehistoric and historic cultural periods recognized on the southern Great Plains and Rocky Mountains at both Fort Carson and its maneuver site.

The installation has identified 13 federally-recognized Indian Tribes with cultural affiliations to the land at Fort Carson and PCMS. A Comprehensive Agreement between Fort Carson and 10 Tribes regarding tribal access, privacy, inadvertent discovery of human remains, and other cultural concerns was finalized and signed in 2004. A separate Comprehensive Agreement with the Jicarilla Apache Nation was signed in 2005.

Two documents guide the Army's cultural resources management on Fort Carson and PCMS: a Memorandum of Agreement between Fort Carson, the SHPO, and the Advisory Council on Historic Preservation (Fort Carson, 1980) and the ICRMP (Fort Carson, 2002) which is being updated and revised during FY 2012. Attempts have been made by Fort Carson to develop a streamlined approach to Section 106 (36 CFR 800 Subpart B) of the NHPA, including a consideration of implementing the Army Alternate Procedures in 2007, which was discarded. Fort Carson is currently in consultation to develop a NHPA Programmatic Agreement for compliance with Section 106 in accordance with 36 CFR 800.14(b).

Fort Carson

Prehistoric, historic, and multi-component sites eligible for inclusion in the NRHP occur throughout Fort Carson. Approximately 94,300 acres of Fort Carson has been inventoried for cultural properties identified in the following categories: districts; buildings; structures; and historic, prehistoric, and multi-component archaeological sites. There is a presence of both archaeological and architectural NRHP-eligible resources. The entire main post area of Fort Carson; has been surveyed for cultural resources and is devoid of known prehistoric sites eligible for inclusion in the NRHP. The Incinerator Complex (ca. 1942) is the only historic district located within the main post. Approximately 25,100 acres of down range Fort Carson are as yet unsurveyed for archaeological resources that are not inside the Artillery Impact/Buffer Area

(approximately 13,000 acres) or the Small Arms Impact Area (approximately 5,200 acres). To date, there are over 1,250 archaeological sites identified at Fort Carson, with 140 determined eligible for inclusion in the NRHP and an additional 56 sites that are potentially eligible pending additional evaluation. One sacred site location has been identified at Fort Carson.

Piñon Canyon Maneuver Site

Prehistoric, historic, and multi-component sites eligible for inclusion in the NRHP occur throughout PCMS.

Approximately 211,900 acres of PCMS has been inventoried for cultural properties identified in the following categories: historic, prehistoric, and multi-component archaeological sites. There is a presence of both archaeological and architectural NRHP-eligible resources. The cantonment area, consisting of 1,660 acres at PCMS has been completely surveyed for cultural resources and contains no sites eligible for inclusion in the NRHP (Fort Carson, 2009b). Studies of the cantonment area structures have not been conducted, since these structures are less than 50 years of age (ca. mid 1980s). Approximately 23,900 acres of PCMS are as yet unsurveyed for archaeological resources. To date, there are over 4,150 archaeological sites identified at PCMS, with 624 determined eligible for inclusion in the NRHP and an additional 52 sites that are potentially eligible pending additional evaluation. Five sacred site locations have been identified at PCMS, along with three TCPs and two Areas of Concern.

4.5.4.2 Environmental Consequences

Fort Carson

No Action Alternative

Impacts to cultural resources under the No Action Alternative are anticipated to be negligible. Fort Carson's Cultural Resources Manager (CRM) evaluates all activities to identify resources that may be affected, determines effects, and initiates the Section 106 consultation process as mandated by the NHPA, prior to the initiation of ground-disturbing activities. At Fort Carson the inventory and evaluation of historic properties through the Cold War era is ongoing. Activities with the potential to affect cultural resources are monitored and regulated through a variety of preventative and minimization measures.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor beneficial impacts are anticipated as a result of the implementation of Alternative 1 at Fort Carson. Removal of temporary facilities would have a very low potential for adverse effects to historic buildings and/or archeological resources. As discussed above, the Incinerator Complex is the only area designated as a historic district on the main post and this is unlikely to be affected by removal of outdated infrastructure and facilities demolition that could occur with force reduction. Any facilities demolition or disposal would occur after review by Fort Carson's CRM. Consultation with the SHPO would occur per 36 CFR 800 of the NHPA as required; therefore, there is a low potential for any eligible historic structures to be affected as a result of this action, and if such an action is proposed, full consultation with the SHPO would occur. The potential impact to NRHP-eligible archaeological sites as a result of less training is anticipated to be reduced.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

This level of growth at Fort Carson is anticipated to have minor impacts to cultural resources. Measures are in place to accommodate training to prevent adverse impacts to cultural resources. The types of training conducted by the additional Soldiers would not change, though

some training areas on Fort Carson might be used with more frequency or intensity compared with current baseline conditions. Fort Carson would continue to follow the procedures it has in place in order to protect cultural resources. The increase of range usage would potentially increase the impact to some cultural resources through small-scale ground disturbance activities. An increase in training activities would be anticipated to make monitoring of archaeological sites more challenging to schedule.

Piñon Canyon Maneuver Site

No Action Alternative

Impacts to cultural resources under the No Action Alternative are anticipated to negligible. Fort Carson's CRM evaluates all activities to identify resources that may be affected, determines effects, and initiates the Section 106 consultation process as mandated by the NHPA, prior to the initiation of ground-disturbing activities.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor beneficial impacts are anticipated as a result of the implementation of Alternative 1, as a result of the potential for reduced training usage of PCMS. No facilities demolition or disposal is anticipated as a result of this alternative and no impacts to historic structures would occur at PCMS which was established by the Army in 1983. There is a no potential for any potentially eligible historic structures to be affected as a result of this action, and implementation of Alternative 1 would reduce the potential for training activities to impact archaeological sites or other potentially eligible cultural resources.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

This level of growth at Fort Carson is anticipated to have minor impacts to cultural resources at PCMS. Measures are in place to accommodate training to prevent adverse impacts to cultural resources. The types of training conducted by the additional Soldiers would not change, though some training areas on PCMS might be used with more frequency or intensity compared with current baseline conditions as more vehicles and Soldiers could utilize these sites during BCT or battalion training events. Fort Carson would continue to follow the procedures it has in place in order to protect cultural resources at PCMS. The increase of range usage would potentially increase the impact to some cultural resources through small-scale ground disturbance activities.

4.5.5 Noise

4.5.5.1 Affected Environment

Fort Carson

Noise-sensitive areas adjacent to Fort Carson include Cheyenne Mountain State Park to the west; Colorado Springs to the north and west; and Security, Widefield, and the City of Fountain to the east. Other noise sensitive areas include Turkey Canyon Ranch and Red Rock Valley Estates along the western boundary and El Rancho and Midway Ranch along the eastern boundary. Noise-sensitive locations near the southern boundary of Fort Carson include the communities of Penrose and Pueblo West, which are located to the southwest and southeast, respectively. Noise-sensitive areas within Fort Carson are primarily located within the main post area, which is where a majority of Family housing, schools, office space, and child development centers are located. The primary sources of noise at Fort Carson are the firing of weapons, specifically large-caliber weapons, such as artillery and tank main guns, as well as the operations of military aircraft at Butts Army Airfield.

Piñon Canyon Maneuver Site

There are limited noise receptors at the PCMS due to the character and nature of land surrounding the installation. Most of the area surrounding PCMS is agricultural ranch land. Noise-sensitive locations adjacent to PCMS consist of a limited number of residences around the installation periphery. The primary sources of noise at PCMS are short-term military training exercises at the small-caliber weapons ranges and from military aircraft operations at the combat assault landing strip by C-130 aircraft. Large-caliber weapons are not fired at PCMS. The NZs for aircraft activity at PCMS do not extend beyond the boundary. The vast majority of live-fire weapons qualification takes place at Fort Carson, not PCMS. Weapons fired on small arms ranges located on the PCMS produce a low level of noise that does not register off post. Noise is also generated during maneuver training, including brigade-level large-scale force-on-force maneuvers, and dismounted Soldier training. Baseline environmental noise conditions at the PCMS are approximately 87 dB during periods of small caliber weapons training (USAPHC, 2012). Current noise levels at the PCMS are not significant. During all training operations at the PCMS, units undergo resource protection and stewardship training, including procedures that alleviate their noise impacts, such as aviation rules (USAPHC, 2012).

4.5.5.2 Environmental Consequences

Fort Carson

No Action Alternative

Negligible impacts from noise are anticipated under the No Action Alternative. The acoustic environment of Fort Carson would continue to be affected by small- and large-caliber weaponry, artillery, and aircraft overflight. Other activities, such as ground maneuver training and exercises resulting in noise created by personnel and vehicles, would continue to contribute noise on and surrounding Fort Carson, to the same levels and intensity as historically experienced.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Impacts from noise are anticipated to be minor and slightly beneficial. Existing ranges would still be utilized for firing the same types of weapons systems and conducting the same types of training though with slightly reduced intensity and frequency. Fort Carson's remaining BCTs would continue to conduct maneuver and live-fire training in the field, however, the number of weapons qualifications and maneuver training events could be anticipated to decrease in proportion with the number of Soldiers stationing at the installation. Noise impacts would likely remain comparable to current conditions, though less frequent. A reduction of 8,000 Soldiers would have no impact on the weaponry being utilized on existing ranges and would not be anticipated to change to current noise contours nor change the risk potential for noise impacts. The current frequency and activities of aviation training activities, a contributor of noise at the installation, would not be anticipated to change, as aviation units would not be impacted by these decisions. Noise contours are not anticipated to change as a result of the implementation of Alternative 1.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be an anticipated minor impact on the installation and surrounding communities by the gain of up to 3,000 Combat/Combat Support Soldiers. No perceptible changes in noise contours that would affect sensitive receptor populations are anticipated given that there are no new types of activities that would occur as a result of stationing of these Soldiers, just an increase in the frequency of existing noise generating activities. The current frequency and activities of aviation training activities, a contributor of noise at the installation, would not be anticipated to change, as aviation units would not be impacted by these decisions. It is anticipated that wildlife on the installation would adjust, as the wildlife populations would not be exposed to any different noise impacts, just a slight increase in frequency to those impacts for which they are already habituated. Noise contours are not anticipated to change as a result of Alternative 1, and only minor impacts are anticipated to occur as a result of implementing this alternative.

Piñon Canyon Maneuver Site

No Action Alternative

Negligible impacts from noise are anticipated under the No Action Alternative. The acoustic environment of PCMS would continue to be affected by small-caliber weaponry and aircraft overflight. Other activities, such as ground maneuver training and exercises resulting in noise created by personnel and vehicles, would continue to contribute noise on and surrounding PCMS, to the same levels and intensity as historically experienced.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Impacts from noise are anticipated to be minor and slightly beneficial. Existing ranges would still be utilized for firing the same types of weapons systems and maneuver training though with slightly reduced intensity resulting from less usage by fewer Soldiers. Fort Carson's remaining BCTs would continue to conduct maneuver at PCMS and live-fire training in the field; however, the number of weapons qualifications and maneuver training events could be anticipated to decrease in proportion with the number of Soldiers stationing at the installation. Noise impacts would likely remain comparable to current conditions overall. A reduction of 8,000 Soldiers would have no impact on the weaponry being utilized on existing ranges and would not be anticipated to change to current noise contours nor change the risk potential for noise impacts. The current frequency and activities of aviation training activities, a contributor of noise at the installation, would not be anticipated to change, as aviation units would not be impacted by these decisions. Noise contours are not anticipated to change as a result of the implementation of Alternative 1.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be an anticipated minor impact on the installation and surrounding communities by the gain of up to 3,000 Combat/Combat Support Soldiers. No perceptible changes in noise contours that would affect sensitive receptor populations are anticipated given that there are no new types of activities that would occur as a result of stationing of these Soldiers, just an increase in the frequency of existing noise generating activities. The current frequency and activities of aviation training activities, a contributor of noise at the installation, would not be anticipated to change, as aviation units would not be impacted by these decisions. It is anticipated that wildlife in and around PCMS would adjust, as the wildlife populations would not be exposed to any different noise impacts, just a slight increase in frequency to those impacts for which they are already habituated. Noise contours are not anticipated to change as a result

of Alternative 2, and only minor impacts are anticipated to occur as a result of implementing this alternative.

4.5.6 Soil Erosion

4.5.6.1 Affected Environment

Fort Carson

Soil types commonly occurring in the region are aridisol (dry, desert-like soils) and entisol (soils that do not show any profile development and which are largely unaltered from their parent rock) soils (USACE, 2002). These soil types are characterized by moderate-to-severe erodibility, landslides, and unstable clay formation movement due to variations in moisture content and temperature (USACE, 2002).

Thirty-four soil categories and 65 soil associations have been recognized on Fort Carson. Predominant soil associations identified are the Penrose-Minnequa Complex, Penrose-Rock Complex, Schamber-Razor Complex, and Razor-Midway Complex (Fort Carson, 2007). The Penrose-Minnequa and Penrose-Rock complexes occur in the southern portion of Fort Carson, in Pueblo and Fremont counties (USDA, 1981).

The main post, located in the northern portion of Fort Carson, is the most highly developed area on the installation and contains post housing, administration, recreational, and other support facilities. Native soils and vegetation occur throughout the main post, primarily in the southern portion, and are broken up by local areas of disturbed soils.

Butts Army Airfield, located on the eastern side of the post adjacent to and south of Wilderness Road, is semi-developed. The airfield contains a landing strip, paved areas, and support facilities. The land surrounding Butts Army Airfield contains native soils and vegetation that are broken up by local areas of disturbance. The least-disturbed soils at Butts Army Airfield occur in the southwestern portion of the airfield.

The downrange area on Fort Carson covers the majority of land on post, is relatively undeveloped, and supports the greatest area of native undisturbed soils. The downrange area has a high degree of wind erosion associated with disturbed soils (areas of concentrated training operations, including berms and dirt roads).

Soil erosion is a problem at Fort Carson. Soils of greatest concern for erosion are clays, silty clays, and clay loams. In particular, the eastern portion of Fort Carson, located within the Fountain Creek Watershed, and the southwest corner of the post draining to Beaver Creek, contains soils that have been identified as being moderately to highly susceptible to erosion (Fort Carson, 2007). Additional information on Fort Carson soil types can be found in the INRMP, and specific information can be obtained from the Natural Resources Conservation Service soil surveys for El Paso, Pueblo, and Fremont counties.

Piñon Canyon Maneuver Site

The PCMS is distinguished by topographic features such as mesas, cuestas, dissected plateaus, deep canyons, and volcanic formations. The soils are formed from parent material of shale, sandstone, and limestone. The type of parent material is a major determinant of soil type and texture at PCMS. Soil types commonly occurring are aridisol and entisol soils. These soil types are characterized by moderate to severe soil erodibility, landslides, and unstable clay formation movement attributable to variations in moisture content and temperature (Fort Carson, 2009b). Extensive overgrazing (prior to 1983), vegetation removal, and soil compaction from mechanized training have contributed to erosion and erosion potential. Additional information on

PCMS soil types can be found in the INRMP, and specific information can be obtained from the Natural Resources Conservation Service soil surveys for Las Animas County.

4.5.6.2 Environmental Consequences

Fort Carson

No Action Alternative

Less than significant adverse impacts are anticipated under the No Action Alternative. Fort Carson would continue its infantry and mechanized training, to include impacts to soils from removal of or damage to vegetation, digging activities, ground disturbance from vehicles, and ammunition or explosives used in training events. The installation's ITAM program conducts monitoring, rehabilitation, and maintenance and repair on areas of high use such as drop zones, artillery firing positions, observation points, and ranges.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Impacts from soil erosion are anticipated to be minor and potentially beneficial. Alternative 1 includes the reduction of no longer needed facilities that could result in short-term adverse impacts from demolition and temporary exposure of bare soils to rain and water and wind erosion. These impacts; however, would be short term in duration. Overall, there would be anticipated beneficial long-term impacts from reduced training and more opportunities for land rehabilitation and natural rest and recovery of the landscape. It is anticipated that there would be less soil erosion and sedimentation attributable to training activities.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There is anticipated to be significant but mitigable impacts to soil resources at Fort Carson as a result of the implementation of Alternative 2. Exposed soils from increased training would become more susceptible to erosion, and soil productivity (i.e., the capacity of the soil to produce vegetative biomass) may decline in disturbed areas. With the potential addition of more maneuver and support units, more vehicles would impact Fort Carson's training areas. More vegetation would be denuded from the training areas by vehicular traffic and more bare soils would be exposed to water and wind erosion. A greater amount of sedimentation would be anticipated to occur in the regional surface waters. Areas with a slope of greater than 30 percent would not be affected by vehicles. Flat to relatively flat areas (vegetation and surface crust) would show the impact from the vehicle maneuvers, turns and traction and increased levels of vegetation loss and compaction from staging areas and assembly areas. Training when soils are wet would adversely impact vegetation, compact soils, accelerate erosion and create ruts that could lead to increased soil loss and gullying. Hull defilades, trenches and other soil disturbing activities would alter the soil profile and remove vegetation. These areas may then be prone to wind and water erosion. Conditions for potential erosion and compaction would increase in areas with increased use. Fort Carson's ITAM program would continue to monitor training lands for disturbance, and would plan and implement rehabilitation and erosion control measures in areas of high use.

Piñon Canyon Maneuver Site

No Action Alternative

Less than significant adverse impacts are anticipated under the No Action Alternative. Fort Carson would continue its infantry and mechanized training at PCMS, to include impacts to soils from removal of or damage to vegetation, digging activities, ground disturbance from vehicles,

and ammunition used in training events. The installation's ITAM program conducts monitoring, rehabilitation, and maintenance and repair on areas of high use such as drop zones and ranges.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Impacts from soil erosion are anticipated to be minor and potentially beneficial. With less training and fewer vehicles at PCMS, it is anticipated that there would be reduced soil erosion and sedimentation attributable to training activities.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There is anticipated to be significant but mitigable impacts to soil resources at PCMS resulting from of the implementation of Alternative 2. Exposed soils from increased vehicles and Soldiers training during maneuver training events would make soils more susceptible to erosion, and soil productivity (i.e., the capacity of the soil to produce vegetative biomass) may decline in disturbed areas. With the potential addition of another maneuver battalion, engineer units and other support units to a BCT, more vehicles would impact PCMS training areas. More vegetation would be denuded from the training areas by vehicular traffic and more bare soils would be exposed to water and wind erosion. A greater amount of sedimentation would be anticipated to occur in the regional surface waters. Areas with a slope of greater than 30 percent would not be affected by vehicles. Flat to relatively flat areas (vegetation and surface crust) would show the impact from the vehicle maneuvers, turns and traction and increased levels of vegetation loss and compaction from staging areas and assembly areas. Training when soils are wet would adversely impact vegetation, compact soils, accelerate erosion and create ruts that could lead to increased soil loss and gullying. Hull defilades, trenches and other soil disturbing activities would alter the soil profile and remove vegetation. These areas may then be prone to wind and water erosion. Conditions for potential erosion and compaction would increase in areas with increased use. However, this alternative would not increase the frequency of training above the historical limits of 4.7 months of mechanized maneuvers at PCMS. Fort Carson's ITAM program would continue to monitor training lands for disturbance, and would plan and implement rehabilitation and erosion control measures in areas of high use.

4.5.7 Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species)

4.5.7.1 Affected Environment

Fort Carson

Fort Carson is located at the western edge of the Central Shortgrass Prairie Ecoregion and is within the upper regions of the Prairie Grasslands Plant Zone. Fort Carson consists of approximately 45 percent grasslands, 29 percent shrublands, 37 percent forest and woodlands, and 4 percent other. Fort Carson habitat supports, among others, the Mexican spotted owl (*Strix occidentalis lucida*), a rare winter resident to Fort Carson (Fort Carson, 2007). Details on vegetation, including noxious weeds, are available in the 2009 *Fort Carson Grow the Army FEIS* (Fort Carson, 2009a).

The federally-threatened Mexican spotted owl (*Strix occidentalis lucida*) is the only listed species known to occur at Fort Carson. Species under consideration for listing and not yet protected under the ESA are the mountain plover (*Charadrius montanus)* (proposed threatened), Arkansas darter (*Etheostoma cragini*) (candidate), and northern leopard frog (*Lithobathes pipiens)* (petitioned). State-listed species on Fort Carson include Arkansas darter (threatened), southern redbelly dace (endangered), and burrowing owl (threatened). The Triploid checkered whiptail (*Cnemidophorus neotesselatus*), designated as a Species at Risk by

the Army, occurs at Fort Carson and PCMS. The *Fort Carson and Piñon Canyon Maneuver Site Integrated Natural Resources Management Plan 2007-2011*, approved by the USFWS and the CDOW, discusses management of rare and listed species, to include the Mexican spotted owl. The threatened Preble's meadow jumping mouse (*Zapus hudonius preblei*) and the Gunnison's prairie dog (*Cynomys gunnisoni*), a candidate for ESA listing, are not known to occur on Fort Carson. The mountain plover (proposed threatened) occurs on Fort Carson and PCMS during the breeding and migratory seasons. It is rare on both locations, nesting at only a few sites.

Wildland fire management, in the form of prescribed burning, is one of the tools used to manage habitat and reduce the risk of wildfires that pose a threat to life and property, which includes sensitive ecosystems, cultural resource sites, and training areas. The training areas on the installation require the use of munitions and weapons systems that increase the chance of wildfire ignition and may damage important resources. The installation's Integrated Wildland Fire Management Plan, with update completed in 2011, lays out specific guidance, procedures, and protocols for the prevention and suppression of wildfires and management of wildland fuels on all Fort Carson training lands, including PCMS (Fort Carson, 2010).

Piñon Canyon Maneuver Site

Like Fort Carson, PCMS is located within the Central Shortgrass Prairie Ecoregion and is within upper regions of the Prairie Grasslands Plant Zone. PCMS consists of approximately 41 percent grasslands, 33 percent shrublands, 17 percent forest and woodlands, and 9 percent other (Fort Carson, 2007). Approximately 25 percent of the cantonment area is mowed native grasses and landscaping plants. No plant species appear on the USFWS list of federally-listed endangered, threatened, and candidate species for Las Animas or Otero counties (USFWS, 2010), a status that remains unchanged since the 2011 *CAB Stationing PEIS*. The African rue (*Peganum harmala*) (A-List species) has been eradicated from PCMS, but continued surveying is conducted due to populations on nearby property. Russian knapweed, Canada thistle, spotted knapweed, and perennial pepperweed are the weed species of most concern at PCMS. No effective biological controls exist for Russian knapweed, and control efforts concentrate on mechanical and chemical methods. Canada thistle is managed using integrated pest management techniques including; biological control, herbicide application, burning, and mowing.

The status of wildlife species on PCMS also remains consistent with that reported in the 2011 *CAB Stationing PEIS*. As part of lower reaches of the Purgatoire River watershed, PCMS supports a relatively intact large mammal community (e.g., elk, mountain lion, pronghorn, bighorn sheep, black bear, mule, and white-tailed deer). Black-tailed prairie dog (*Cynomys ludovicianus*) on PCMS provide food for the bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), burrowing owl (*Athene cunicularia*), and ferruginous hawk (*Buteo regalis*). There are species currently listed as endangered or threatened under the ESA that are found in Las Animas and Otero counties; however, none are known to occur on PCMS. As mentioned previously for Fort Carson, the mountain plover, proposed to be listed as a threatened species, occurs on Fort Carson and PCMS during the breeding and migratory seasons. It is rare on both installations, nesting at only a few sites. Further information on PCMS wildlife, to include the Triploid checkered whiptail (*Cnemidophorus neotesselatus*), designated as a Species at Risk by the Army, and Colorado State Species of Concern, such as the peregrine falcon, is available from the installation's INRMP and the 2009 *Fort Carson Grow the Army FEIS.*

Wildland fire management occurs at PCMS. When severe wildfires occur, as during the 2008 fire season at PCMS, the installation takes action, as appropriate, to evaluate damages,

implement rehabilitation efforts, and monitor impacts of both the wildfire and subsequent rehabilitation.

4.5.7.2 Environmental Consequences

Fort Carson

No Action Alternative

Negligible adverse effects would occur at Fort Carson as a result of the implementation of the No Action Alternative. Fort Carson would continue to adhere to its existing resource management plans to further minimize and monitor any potential effects. Units are briefed prior to each training event regarding sensitive areas on post, such as protected species habitat, and activities that are prohibited within certain areas.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor beneficial impacts are anticipated to biological resources as a result of the implementation of Alternative 1. Scheduling conflicts for training area access to conduct resource monitoring would be reduced. Proactive conservation management practices would be more easily accomplished with reduced mission throughput. A reduction in training may lessen damage to wildlife habitat and decrease the current levels of displacement and disturbance of wildlife during training events. Current levels of impact to ground nesting birds may also decrease from reduced ground maneuver training.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Less than significant adverse impacts are anticipated as a result of the implementation of Alternative 2 for most wildlife species. Non-mitigable impacts to ground nesting birds would be anticipated (Tazik, 1991). The increase in the number of Soldiers represents less than a 15 percent increase above the current level of Soldier stationing at Fort Carson. While this moderate force augmentation would increase traffic in the training lands and ranges, it would not cause significant degradation or destruction of sensitive species habitats. Fort Carson proactively manages its conservation programs within the installation's training areas. Access to training lands and ranges for conservation and habitat management; however, would become more difficult with increased training throughput.

A gain of 3,000 Combat/Combat Support Soldiers would likely increase the displacement of wildlife and increase damage to wildlife habitat. Trees and shrublands are likely to have decreased recruitment rates and a subsequent decline in available habitat. Wildfire associated with range operations could lead to increased loss of winter habitat potentially available for future use by Mexican Spotted Owls. For some raptors there would likely be a decrease in site selection and an increase in nest abandonment. Disturbance adapted species would likely increase while populations that are disturbance prone would be adversely impacted from the slight increase in training activities. Training would have a slightly negative effect on the species such as burrowing owls, prairie dogs, mountain plover, because bivouac, dismounted and off-road vehicle training would increase in frequency and/or duration. Mule deer, elk, pronghorn, and many species of raptors are more readily flushed or displaced by pedestrians than by moving vehicles. Wildlife species may be affected by increased mounted military training through direct disturbance, mortality caused by vehicles, and by indirect alteration of their habitat. Increased Soldier presence may disrupt wildlife species and game populations from foraging or reproducing.

Piñon Canyon Maneuver Site

No Action Alternative

Negligible adverse effects would occur at PCMS as a result of the No Action Alternative. Fort Carson would continue to adhere to its existing resource management plans at PCMS to further minimize and monitor any potential effects. Units are briefed prior to each training event regarding sensitive areas on post, such as protected species habitat, and activities that are prohibited within certain areas.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor beneficial impacts to biological resources as a result of the implementation of Alternative 1 are anticipated. A reduction in training intensity from less Soldiers and vehicles may lessen damage to wildlife habitat and decrease the current levels of displacement and disturbance of wildlife during training events. Current levels of impact to ground nesting birds may also decrease from reduced ground maneuver training.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Less than significant adverse impacts are anticipated as a result of the implementation of Alternative 2. The increase in Soldiers and vehicles training at PCMS would not lead to significant degradation or destruction of sensitive species habitats. Fort Carson proactively manages its conservation programs within PCMS training areas.

A gain of 3,000 Combat/Combat Support Soldiers would likely increase the displacement of wildlife and game populations and increase slightly damage to wildlife habitat. Trees and shrublands are likely to have decreased recruitment rates and a subsequent decline in available habitat. Invasive species populations at PCMS could increase as a result of increased disturbance. For some raptors there would likely be a decrease in site selection and an increase in nest abandonment. Disturbance adapted species would likely increase while populations that are disturbance prone would be adversely impacted from the slight increase in training activities. Training would have a slightly negative effect on the species such as Burrowing Owls, Prairie Dogs, Mountain Plover, because bivouac, dismounted and off-road vehicle training would increase in frequency and/or duration. Mule deer, elk, pronghorn, and many species of raptors are more readily flushed or displaced by pedestrians than by moving vehicles. Wildlife species may be affected by increased mounted military training through direct disturbance, mortality caused by vehicles, and by indirect alteration of their habitat. Increased Soldier presence may disrupt wildlife species and game populations from foraging or reproducing.

4.5.8 Wetlands

4.5.8.1 Affected Environment

Fort Carson

Fort Carson is included in the NWI database maintained by the USFWS. Original data showed 487.9 acres of wetlands on Fort Carson. There has been considerable ground-truthing of sites to improve the quality of the original data. Surveys have increased the estimate of wetlands on Fort Carson and current estimates indicate that Fort Carson has approximately 1,028 acres of wetlands (Fort Carson, 2007). Wetlands are generally characterized as linear (e.g., streambeds) or small and isolated. Linear wetlands occur along intermittent and perennial stream channels and tributaries, primarily Rock, Little Fountain, Turkey, Little Turkey, Red, Sand, and Wild Horse creeks. Isolated wetlands usually occur where a dam has been built for erosion control or for water storage; most are only 1-2 acres in size. The largest downrange

wetland is on the upper reaches of Teller Reservoir, encompassing approximately 100 acres. In addition to cattails, common wetland species are cottonwood and willow. Some wetlands have been invaded by tamarisk, a noxious weed of primary wetland management concern. About six springs occur on Fort Carson, and they have very small associated wetlands. There are also a number of wetland areas scattered throughout the main post, typically in natural or stormwater runoff drainages and in an area south of Butts Army Airfield.

As described in the 2007-2011 INRMP, the wetland and riparian area buffers are generally protected from vehicular and mechanized training due to the surrounding topography, which makes these areas unsuitable for this type of training. Due to the avoidance and minimization efforts the Army currently implements as part of its INRMP and ITAM procedures, direct effects to wetlands do not normally occur.

Piñon Canyon Maneuver Site

Natural water bodies and wetlands are generally small and infrequent on PCMS but are important in contributing to wildlife habitat diversity. The total wetland area on PCMS is estimated to be 361 acres, of which approximately 290 acres are man-made (Fort Carson, 2007). Most wetlands on PCMS are associated with side canyons of the Purgatoire River and water developments such as erosion control dams, rock check dams and other erosion control features. Playas (flat-bottomed depressions that are periodically covered by water) are also present, and additional small wetlands are associated with springs and other water bodies, such as erosion control impoundments, stock watering ponds, and the overflow from windmills.

4.5.8.2 Environmental Consequences

Fort Carson

No Action Alternative

The No Action Alternative would have a minor adverse effect to wetlands on Fort Carson. Wetlands impacts from projects already under construction (or for which NEPA is complete and construction pending) have been assessed and, if required, appropriate mitigation and permitting have occurred. Additionally, training, personnel operations, and routine maintenance and monitoring activities on Fort Carson would continue to occur, resulting in minimal impacts to wetlands. These are minimized by BMPs and regular maintenance of roads, ranges, training lands, and developed areas.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor beneficial impacts to wetlands as a result of the implementation of Alternative 1 are anticipated. A force reduction at Fort Carson would mean tank roads, ranges, and training areas would be less utilized. Less soil would be denuded of vegetation and less sediment would run off into wetlands to impair their ecological function. As such, the loss or degradation of wetland systems would occur less frequently or to a decreased extent. Currently, degraded wetlands would have more time to recover their function between training events and there would be less risk of inadvertent wetland loss from training damage.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be a minor impact to wetland areas as a result of the implementation of Alternative 2. Training throughput would increase. Prior to scheduling training area for unit exercises; however, Fort Carson range and environmental personnel would continue to coordinate to avoid and minimize sensitive resource impacts when planning for training events. If it appears that wetland impacts are unavoidable, the appropriate level of permitting and mitigation would be

obtained prior to the training event. Riparian buffers would continue to be protected from vehicular and mechanized training to minimize direct impacts. Direct and indirect impacts to wetlands, as a result of this alternative, would include increased disturbance to wetland vegetation and increased erosion and discharge into the wetlands. Indirect impacts to wetlands would occur from increased downrange training causing erosion and sedimentation processes in drainages. Construction and maintenance of erosion-control dams would catch sediment and limit wetland siltation impacts from increased training.

Piñon Canyon Maneuver Site

No Action Alternative

The No Action Alternative would have a negligible effect to wetlands at PCMS. Wetlands impacts are minimized by BMPs, such as erosion control dams, and regular maintenance of roads, ranges, training lands, and developed areas. A minimal amount of wetlands exist on PCMS with some areas being designated as ephemeral wetlands.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor beneficial impacts to wetlands as a result of Alternative 1 are anticipated. A force reduction at Fort Carson would mean tank roads, ranges, and training areas would be less utilized at PCMS. Less vegetation would be denuded and less sediment would run off into wetlands to impair their ecological function. As such, the loss or degradation of wetland systems would occur less frequently or to a decreased extent. Degraded wetlands would have more time to recover their function between training events and there would be less risk of inadvertent wetland loss from training damage.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be a negligible impact to wetland areas as a result of the implementation of Alternative 2. Training intensity would increase at PCMS. Riparian buffers would continue to be protected from vehicular and mechanized training to minimize direct impacts. Direct and indirect impacts to wetlands may increase slightly due to increased disturbance to vegetation and increased erosion and discharge into the wetlands.

4.5.9 Water Resources

4.5.9.1 Affected Environment

Fort Carson

Potable Water. Fort Carson purchases its drinking water from Colorado Springs Utilities. Colorado Springs Utilities maintains an extensive testing program that assures full compliance with the requirements of the SDWA. In addition, Fort Carson Support Services performs routine supplementary testing for chlorine levels, coliform contamination, and chlorination byproducts on the drinking water distribution system with the goal of providing water that is safe to drink for all Fort Carson consumers. On an annual schedule, testing for lead and copper is conducted on water samples collected from schools, child development centers, and Family housing.

Fort Carson, to include the privatized housing on Fort Carson, used approximately 900 million gallons of water in calendar year 2011. Even with all the growth on Fort Carson, water use since 2001 has been reduced by more than 20 percent through proactive garrison and housing watering policies and initiatives such as rain sensors on irrigation systems. The Fort Carson Cheyenne Shadows Golf Course is being irrigated with treated effluent from the installation's sewage treatment plant, which conserves the use of potable water. Water storage tanks and unit transported potable water serve downrange training areas and ranges.

Fort Carson has recently completed a major upgrade of the potable water system that serves the new Wilderness Road complex and the Butts Army Airfield expansion. In addition, older leak-prone water mains in the cantonment are being replaced under the Sustainment, Restoration and Modernization Program.

Wastewater. The installation operates and maintains a sanitary sewage treatment plant that services the main post area, the Family housing area, Butts Army Airfield, and the Range Control complex. This system also services Cheyenne Mountain Air Station under an Inter-Service Support Agreement.

The installation operates a well-managed central vehicle wash facility for effective heavy equipment cleaning and there are individual washracks and wash bays at the various motorpools. Fort Carson's industrial waste treatment facility (IWTF) provides the capability for the centralized treatment of motorpool wastewater. Treated IWTF water is directed to the sewage plant for further treatment. Most motor pool washracks and some floor drain wastewaters are connected to the IWTF.

The Wilderness Road Complex, the Colorado Army National Guard Centennial Training Site and 10th SFG Complex (all south of the main post area) are served by individual oil/water separators and are not connected to the IWTF. A limited industrial system at Butts Army Airfield is combined with the sanitary sewer and both are pumped back to the main sewage treatment plant. There are plans in place for an upgraded industrial system at Butts Army Airfield that will be served by a dedicated sewer line connection to the IWTF.

Stormwater. The northern and eastern portions of the installation are located within the Fountain Creek watershed of the Arkansas River Basin and drain southeasterly into Fountain Creek. Stormwater runoff in the northern portion of the installation flows into one of four main drainages: B-Ditch, Clover Ditch, Central Unnamed Ditch, or Rock Creek, which are all tributaries to Fountain Creek. The southern and western portions of the installation drain directly into the Arkansas River to the south. These northern drainages have historically been considered ephemeral or intermittent, in which no flow occurs in some reaches of these drainages for long periods of time during the year, and with the high flow occurring between April and September. Modern day conditions within the watershed, however, have changed the system dynamics, which now typically exhibit perennial flows in most areas of these northern-most drainages. The majority of flows in these drainages consist of runoff from precipitation and snowmelt, which has been increased due to the higher percentages of impervious areas within the watershed. Groundwater seepage and return flows also contribute to baseflows in these drainages.

As a requirement of AR 200-1, it is the policy of the installation to comply with applicable federal, state, and local regulations regarding water resources management and permitting. As described in the Stormwater Management Plan (SWMP) (Fort Carson, 2011b) all work performed at Fort Carson is subject to stoppage by installation environmental officials for failure to comply with federal, state, County, local, or Fort Carson stormwater requirements. Three stormwater permits are utilized at Fort Carson as part of the stormwater program: the NPDES General Permit for Stormwater Discharges for Construction Activity in Colorado- COR12000F, MS4 Permit Number COR042001, and the EPA's Multi-Sector General Permit (MSGP 2000). The SWMP is designed to reduce the discharge of pollutants from Fort Carson to the maximum extent practicable and to protect water quality. Included in the document are management practices, control techniques, system design, engineering methods, and other provisions appropriate for the control of pollutants in discharges from Fort Carson.

Groundwater. Groundwater at Fort Carson exists in both alluvial and bedrock aquifers. The primary aquifer at Fort Carson is the Dakota-Purgatoire bedrock aquifer. In general, the quality

of the groundwater on Fort Carson is in good quality with the exception of localized areas of elevated nitrates, high dissolved solids, and sulfates exceeding drinking water standards.

Water Rights. Fort Carson retains approximately 50 surface and subsurface waters rights on Fort Carson. Some of these water rights support the training mission by assuring adequate water supplies.

Piñon Canyon Maneuver Site

Potable Water. PCMS purchases treated potable water from the City of Trinidad for use in the cantonment area. The water pipeline from Trinidad to the PCMS along U.S. 350 has recently been upgraded by a repair and replacement project. After the water is delivered to the PCMS, it is stored in a 500,000-gallon tank. The potable water system is adequate to support a maximum of approximately 5,000 personnel based on a water consumption rate of 35 gallons per day (gpd) per person and other installation-related support activities (such as dust control and emergency fire suppression) (Fort Carson, 2009b). The water storage tank and potable water distribution system in the main post is currently operating within capacity.

Wastewater. PCMS discharges sanitary wastewater to its evaporative lagoons. The cantonment primarily uses evaporative, nondischarging treatment and oxidation ponds, constructed in 1985 and upgraded in 2006 for sanitary wastewater and some stormwater treatment (Fort Carson, 2005). The combined treatment facility is located in the southwestern corner of the cantonment. The treatment/oxidation ponds are currently operating at levels below their capacity (Fort Carson, 2009b).

The bulk fuel facility directs stormwater and potential fuel spills to a separate lined lagoon served by an oil water separator. The effluent from this lagoon is then directed to the treatment/oxidation ponds. Most facilities located outside of the cantonment area have septic systems and leach fields (Fort Carson, 2009b). Portable toilets are used in the training areas when septic systems are not available.

Stormwater. The PCMS stormwater system is summarized in the 2011 *CAB Stationing PEIS*. As water resource mitigation measures are part of the 2011 *CAB Stationing ROD,* the installation is working towards the goal of developing a SWMP for PCMS to develop management recommendations for water resources in and around PCMS.

Groundwater. The primary source of groundwater is the Dakota-Purgatoire aquifer. Recharge on PCMS occurs through precipitation and subsurface inflow from nearby aquifers. Water quality testing of groundwater determined that the groundwater beneath PCMS contains concentrations of dissolved solid, sulfate, iron, manganese, nitrate, chloride, fluoride, Se, and radionuclide constituents that exceed domestic or public-use water quality standards. Additionally, there are 95 wells at PCMS, but few are currently functional.

Floodplains. Floodplains have not been mapped at PCMS. There are flood prone areas along the drainages in the training areas, but the cantonment area does not typically flood.

4.5.9.2 Environmental Consequences

Fort Carson

No Action Alternative

The No Action Alternative would have minor adverse impacts to water resources. No change from existing conditions would occur and all construction, operation, and maintenance projects already under way have obtained the NPDES permit and other applicable permits and are operating in adherence to their guidance. Training activities would continue, both on ranges and training lands, with adverse impacts mitigated via the ITAM land rehabilitation program.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor beneficial impacts are anticipated as a result of the implementation of Alternative 1. A loss of up to 8,000 Soldiers would reduce training area, decreasing the chance of potential surface water impacts to occur at Fort Carson. The demand for potable water would also be diminished, as a result of the implementation of Alternative 1 would create additional treated wastewater capacity for other uses at the installation and decrease the amount of wastewater that required treatment.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Overall, minor impacts are anticipated as a result of the implementation of Alternative 2. Fort Carson currently has the water and waste-water capacity to meet increased water demand. No new major construction would occur under this alternative; however, an increase in training would require using existing road, trail, and training areas with greater intensity. This could lead to minor increased sedimentation and surface water impacts attributable to soils compaction, increased vegetation loss, and increased sheet flow during rain events. Based on an average daily use of 109 gpd per person, it is anticipated that wastewater would increase by 327,000 gpd with an increase in 3,000 Soldiers, well within the permitted limits even when considering the potential increase in the numbers of Family members and dependents. Impacts from increased erosion and discharge during construction would be anticipated to be minor for any limited construction required to support Soldier stationing. Increased runoff and intensity of that runoff post-construction would occur due to increased impervious area, but would be minor impacts. Fort Carson would follow procedures outlined in the EPA General Construction Permit and Section 438 of the Energy Independence and Security Act, both of which are requirements.

Piñon Canyon Maneuver Site

No Action Alternative

The No Action Alternative would have negligible adverse effects to water resources. No change from existing conditions would occur and all construction, operation, and maintenance projects already under way have obtained the NPDES permit and other applicable permits and are operating in adherence to their guidance. Training activities would continue, both on ranges and training lands, with adverse impacts mitigated via the ITAM land rehabilitation program.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

A reduction of 8,000 Soldiers would result in minor beneficial impacts and would result in decreased water consumption and wastewater generation requirements.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Water resources impacts are anticipated to have a minor impact to PCMS. Increased training intensity would lead to a minor impact from additional sediment deposition into surface waters. Fort Carson would review and revise the PCMS SWPPP to ensure its adequacy and continue to incorporate BMPs for any new training activities at PCMS.

4.5.10 Facilities

4.5.10.1 Affected Environment

Fort Carson

Fort Carson is an active military training facility that supports garrison administrative functions, Soldiers and their Families, and training readiness. The main post area contains most of the facilities on Fort Carson such as Soldier and Family housing, administrative, maintenance, community support, recreation, and supply and storage facilities, utilities, and classroom and simulation training facilities. For the most part, industrial operations take place at the east side of the main post area, the north end of the main post area, and at Butts Army Airfield. Limited facilities are located downrange. Over the past decade facilities construction has taken place south of the main post, including the 10th SFG Complex, Range Control Complex, the Colorado Army National Guard Centennial Training Site, mock villages for urban warfare training and range construction and upgrades. Considerable construction occurred to support BRAC 2005 stationing, Grow the Army stationing, and is planned to support Army decisions to station a CAB at Fort Carson. Major construction efforts are planned to support CAB complex build-out in the vicinity of Butts Army Airfield.

Piñon Canyon Maneuver Site

The PCMS occupies approximately 235,000 acres and is located about 150 miles southeast of Fort Carson within Las Animas County, Colorado. The 1,670-acre cantonment area is located at the west central edge of PCMS. The cantonment area contains administrative buildings and support facilities that are used during training exercises.

4.5.10.2 Environmental Consequences

Fort Carson

No Action Alternative

Impacts to facilities would be minor under the No Action Alternative. Fort Carson's current facility shortfalls have been prioritized and are seeking or have received Army funding. The installation would continue to implement the Army's FRP and select demolition of outdated facilities.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor beneficial impacts are anticipated as a result of the implementation of Alternative 1. An increase in the FRP and facilities demolition at Fort Carson would occur as a result of Alternative 1. Older, less efficient facilities nearing the end of their life-cycle would be demolished when no longer needed to support Soldiers or their Families to save the Army on maintenance and energy requirements. Facility usage and availability for the remaining population would not be affected. Some facilities could be re-purposed to reduce crowding or support other units. Sewer collection systems and water distribution systems could experience problems if underutilized and may need to be monitored to ensure efficient operation.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be significant but mitigable impacts to facilities. Increased Soldier strength of 3,000 would be reflected through increased usage throughout the cantonment area and increased usage of training facilities. The Real Property Master Plan would require modifications to allow for implementation of this alternative. Some additional construction of facilities would be needed to support new Soldiers stationed at Fort Carson to implement

Alternative 2. Some of these facilities would include a battalion headquarters facility, company operations facility, motorpool, and barracks. Fort Carson legacy facilities, which are undersized and inefficient, would need to be utilized heavily in accommodating the growth of additional Soldiers.

Piñon Canyon Maneuver Site

No Action Alternative and Alternatives 1 and 2

There would be negligible anticipated impacts for all of the alternatives. No new facilities would be required.

4.5.11 Socioeconomics

4.5.11.1 Affected Environment

Fort Carson

Fort Carson's ROI consists of El Paso, Pueblo, and Fremont counties. Fort Carson is an Army post located near Colorado Springs, primarily in El Paso County, Colorado, and extending south into Pueblo and Fremont counties.

Population and Demographics. The Fort Carson population is measured in three different ways. The working population is 25,718, and consists of Soldiers and Army civilians working on post. The population that lives on Fort Carson consists of 8,162 Soldiers and 12,406 dependents, for a total of 20,568. Finally, the portion of the ROI population related to Fort Carson is 44,200 and consists of Soldiers, civilian employees, and their dependents living off post.

The ROI county population is 825,000. Compared to 2000, the ROI's 2010 population increased in El Paso, Pueblo, and Fremont counties (Table 4.5-3). The racial and ethnic composition of the ROI is presented in Table 4.5-4.

Table 4.5-3. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
El Paso	620,000	+ 20.4
Pueblo	160,000	+ 12.4
Fremont	45,000	+ 1.5

Table 4.5-4. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Colorado	70	4	3	21	1	2	0
El Paso	72	6	1	15	3	3	0
Pueblo	54	2	1	41	3	1	0
Fremont	80	4	1	12	1	1	0

Permanent party Soldiers and full-time civilians generate demand for housing, enroll their children in local schools, and require municipal services like other households in the region.

Temporary duty (TDY) personnel and transient military and civilian populations generate increased demand for lodging, dining, and retail services in the area.

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased in the State of Colorado and El Paso County, and decreased in Pueblo and Fremont counties (Table 4.5-5). Employment, median home value and household income, and poverty levels are presented in Table 4.5-5.

Table 4.5-5. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
Colorado	2,005,578	+ 4.80	234,100	55,735	12.60
El Paso	216,331	+ 3.00	211,900	55,621	11.50
Pueblo	46,927	- 2.90	138,100	39,016	16.90
Fremont	7,863	- 2.30	152,200	39,714	18.10

Fort Carson on-post housing accommodates approximately 25 percent of the permanent party Soldier population with dependents who are assigned to Fort Carson. There are currently 3,260 Family housing units on Fort Carson, which are managed through an RCI partnership. This partnership has been in effect since September 1999. Fort Carson Soldiers occupy approximately 91 to 95 percent of the available units in Family housing. As of 30 June 2012; 2,989 accompanied Soldiers resided in Fort Carson Family housing. The number of dual military households living on-post is unknown and is not tracked. Currently, there is a waiting list for on-post housing. This list is especially long for the 3- and 4-bedroom homes for junior enlisted Soldiers.

Unaccompanied Personnel Housing on Fort Carson has 6,035 single Soldiers (unaccompanied) living in on-post barracks. All are in the private (E1) to sergeant (E5) ranks. All unaccompanied Soldiers, Staff Sergeant and above, must live off-post. Fort Carson does not possess any single senior enlisted housing or single officer housing. This is by design as Colorado Springs can accommodate these populations.

Off-post housing consists predominately of apartments. The 2008 Fort Carson Regional Growth Plan (PPACG, 2008) identified that the community, based on the number of housing units under construction and planned, would be able to meet the housing demand through 2011. The number of rental units was also anticipated to be sufficient. However, the Plan identified issues regarding affordability of single family homes and the availability of quality, affordable multifamily housing for some new troops and Families.

***Schools*.** According to PPACG's growth plan, in 2010 – 2011, approximately 10,200 children attended school in seven local school districts (not including other districts, private schools, or home schools. The seven districts included Academy D-20, Cheyenne Mountain d-12, Colorado Springs D-11, Falcon D-49, Fountain-Fort Carson, D-8, Harrison D-2, and Widefield D-3. The highest percent of dependents attended Fountain-Fort Carson D-8 with 43 percent of the total in attendance.

Public Services, Health and Safety. Fort Carson's Directorate of Emergency Services (DES) enhances safety, security, and increases force protection by providing 24 hour police and fire support to the Fort Carson community.

Evans Army Community Hospital opened in 1986 and serves all Active Duty personnel, their dependents, and retirees. It also serves the Fort Carson's Warrior Transition Unit and Army elements in Pueblo, Colorado and Utah. The hospital was first accredited in October 1954 and has placed in the top 10 percent of all healthcare organizations in the country during its most recent accreditation.

Fort Carson ACS is a human service organization with programs and services dedicated to assisting Soldiers and their Families under the FMWR. The FMWR is a comprehensive network of support and leisure services designed to enhance the lives of Soldiers (Active, Reserve, and Guard), their Families, civilian employees, military retirees, and other eligible participants. Services at Fort Carson include Family, child and youth programs, recreation, sports, entertainment, and leisure activities. The Child, Youth, and School Services (CYSS) is a division within the FMWR that provides Child Development Centers (CDCs) for children ages 6 weeks to 5 years; School Age Services for ages 6 to 10 years, and middle school and teen programs for ages 11 to 18 years, as well as sports and instructional classes.

Fort Carson offers its military and their dependents and civilians access to many recreation facilities to include, but not limited to, fitness centers, outdoor recreation opportunities, sports teams, bowling, auto crafts shop, a dog park, and a golf course (which is open to the public as well).

Piñon Canyon Maneuver Site

PCMS has no Active Duty or permanent party likely to be affected as a maneuver training site.

4.5.11.2 Environmental Consequences

Fort Carson

No Action Alternative

There would be negligible impacts anticipated under the No Action Alternative. This alternative would be anticipated to provide a steady-state contribution of economic and social benefits and costs. No additional impacts to housing, public and social services, public schools, public safety, or recreational activities is anticipated.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of up to 8,000 military (uniformed Soldier and DoD civilian) positions, each with an average annual income of $41,830. In addition, this alternative would affect an estimated 4,464 spouses and 7,680 dependent children, for a total estimated potential impact to 12,144 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 20,144.

Based on the EIFS analysis, there would be significant socioeconomic impacts for population in the ROI for this alternative. There would be no significant impacts for sales volume, employment, or income. The range of values that would represent a significant economic impact in accordance with the EIFS model are presented in Table 4.5-6. Table 4.5-7 presents the estimated economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.5-6. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	7.56	8.06	3.74	3.21
Economic Contraction Significance Value	- 8.16	- 7.74	- 4.23	- 1.57
Forecast Value	- 2.16	- 1.93	- 3.66	- 2.44

Table 4.5-7. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- $554,736,100	- $417,692,300	- 8,844 (Direct) - 2,017 (Indirect) - 10,861 (Total)	- 20,144
Percent	- 2.16 (Annual Sales)	- 1.93	- 3.66	- 2.44

The total annual loss in sales volume from direct and indirect sales reductions in the ROI represents an estimated -2.16 percent change in total sales volume from the current sales volume of $25.6 billion within the ROI. State tax revenues would decrease by approximately $16.08 million as a result of the loss in revenue from sales reductions. Some counties within the ROI supplement the state sales tax of 2.9 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by 1.93 percent. While 8,000 direct military and government civilian positions would be lost within the ROI, EIFS estimates another 844 direct contract service jobs would be lost, and an additional 2,017 job losses would occur from a reduction in demand for goods and services in the ROI as a result of the indirect impacts of force reduction. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 10,861 jobs, or a -3.66 percent change in regional employment. The total number of employed positions (military and private employment) in the ROI is estimated to be approximately 297,000. A significant population reduction of 2.44 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 825,000 people (including those residing on Fort Carson) that live within the ROI, 20,144 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes civilian and military employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.5-8 shows the total projected economic impacts, based on the RECONS model, that occur as a result of the implementation of Alternative 1.

Table 4.5-8. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- $365,808,847 (Local) - $647,147,505 (State)	- $406,640,553	- 9,037 (Direct) -1,152 (Indirect) -10,189 (Total)
Percent	- 1.42 (Total Regional)	- 1.88	- 3.4

The total annual loss in sales volume from direct and indirect sales reductions in the region represents an estimated -1.42 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 0.74 percentage points less than estimated by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately $18.77 million as a result of the loss in revenue from sales reductions, which is $2.96 million more in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by 1.88 percent, slightly less than the 1.93 percent reduction projected by EIFS. While 8,000 direct military and government civilian positions would be lost within the ROI, RECONS estimates another 1,037 direct contract and service jobs would be lost, and an additional 1,152 job losses would occur from indirect reduction in demand for goods and services in the ROI as a result of force reduction. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 10,189 jobs, or a -3.4 percent change in regional employment, which would be 0.91 percentage points less than projected by the EIFS model.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 1 would lead to a net reduction of economic activity within the ROI.

***Population and Demographics*.** There would be significant socioeconomic impacts for population in the ROI for this alternative.

Housing. Alternative 1 would increase availability of single occupancy barracks and single Soldier housing. If the number of permanent party Soldiers were reduced on Fort Carson, there is a possibility that vacancies could occur in on-post Family housing. Once the Active Duty military waiting lists are empty, remaining units would be filled according to the "waterfall" priority list outlined in Section 4.5.11.1. Fort Carson anticipates minor adverse impacts to the housing and rental market in the region. This would have the most impact in El Paso County where rental vacancy and current military tenant populations are highest.

***Schools*.** Fort Carson anticipates the potential for significant adverse economic impacts to Fountain-Fort Carson (D8) Public School that supports about 4,300 Fort Carson dependents (43 percent of the total student population) as a result of the implementation of Alternative 1 (PPACG, 2008). Fountain-Fort Carson receives significant federal and DoD funding based on the number of military-connected children it supports. Considering that on-post housing can support 25 percent of Fort Carson's current permanent party Soldiers, the impact of Alternative 1 on the number of military personnel and associated dependents who would live on-post is unknown. For this reason, the impact of Alternative 1 is also unknown. There are sixother local school districts within the ROI (PPACG, 2008). Fort Carson anticipates less than significant adverse impacts to school funding in the region as a whole if Alternative 1 is implemented.

Public Health and Safety. As a result of the implementation of Alternative 1, resident and daytime population levels on Fort Carson would decrease and could potentially reduce demand on law enforcement, fire and emergency service providers, and on medical care providers on and off post, but there would continue to be a demand for these services. Fort Carson anticipates less than significant impacts to public health and safety.

***Family Support Services*.** As a result of the implementation of Alternative 1, a reduction in permanent-party Soldiers could reduce demand on select Family support service providers on post. But there would continue to be a demand for child care and other ACS programs. Off-post Family support services throughout the region would not likely experience a significant decrease in clients. Fort Carson anticipates less than significant impacts to Family support services under this alternative.

Recreation Facilities. A reduction in permanent-party Soldiers could potentially decrease use of recreation facilities on post. Any decrease in utilization would be minor. Fort Carson does not anticipate significant adverse or beneficial impacts to recreation facilities under this alternative.

Environmental Justice. As a result of the implementation of Alternative 1, Fort Carson does not anticipate a disproportionate adverse impact to minorities, economically disadvantaged populations or children would occur in the ROI. Fort Carson anticipates that job loss would be felt across economic sectors and at all income levels and spread geographically throughout the ROI. The proposed force reduction in military authorizations on Fort Carson would not have disproportionate or adverse health effects on low-income or minority populations in the ROI. The African-American population of El Paso County is slightly above the average for the state, while the Hispanic proportion is lower. Given this, the adverse effects of Alternative 1 would be negligible.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Economic Impacts. Alternative 2 would result in the gain of up to 3,000 military (uniformed Soldier and DoD civilian) positions, each with an average annual income of $41,830. In addition, this alternative would affect an estimated 1,674 spouses and 2,880 dependent children, for a total estimated potential impact to 4,554 dependents. The total population of military employees and their dependents directly affected by Alternative 2 would be projected to be 7,554 military employees and their dependents.

Based on the EIFS analysis, there would be no significant impacts for sales volume, income, population, and employment. The range of values that would represent a significant economic impact in accordance with the EIFS model are presented in Table 4.5-9. Table 4.5-10 presents the estimated economic impacts to the region for Alternative 2 as assessed by the Army's EIFS model.

Table 4.5-9. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 2

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	7.56	8.06	3.74	3.21
Economic Contraction Significance Value	- 8.16	- 7.74	- 4.23	- 1.57
Forecast Value	0.81	0.72	1.37	0.92

Table 4.5-10. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	$208,026,000	$156,634,600	3,316 (Direct) 756 (Indirect) 4,072 (Total)	7,554
Percent	0.81 (Annual Sales)	0.72	1.37	0.92

The total annual gain in sales volume from direct and indirect sales increases in the ROI would represent an estimated 0.81 percent change in total sales volume from the current sales volume of $25.6 billion within the ROI. It is estimated that state tax revenues would increase by approximately $10.5 million as a result of the gain in revenue from sales increases. Some counties within the ROI supplement the state sales tax of 2.9 percent by varying percentages, and these additional local tax revenues would be gained at the county and local level. Regional income would increase by 0.72 percent. While 3,000 direct military and government civilian positions would be gained within the ROI, EIFS estimates another 316 direct contract service jobs would be gained, and an additional 756 new jobs would be created from an increase in demand for goods and services in the ROI as a result of the indirect impacts of force increases. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 4,072 jobs, or a 1.37 percent change in regional employment. The total number of employed positions (military and private employment) in the ROI is estimated to be approximately 297,000. A population increase of 0.92 percent within the ROI would be anticipated as result of this alternative. Of the approximately 825,000 people (including those residing on Fort Carson) that live within the ROI, and additional 7,554 military employees and their dependents would reside in the area following the implementation of Alternative 2. This would lead to an increase in demand for housing, and decreased housing availability in the region. This would lead to a slight increase in median home values. It should be noted that this estimate of population increase includes civilian and military employees and their dependents.

Table 4.5-11 shows the total projected economic impacts, based on the RECONS model, that would be estimated to occur as a result of the implementation of Alternative 2.

Table 4.5-11. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment
Total	$137,178,317 (Local) $242,680,314 (State)	$152,490,207	3,821 (Total) 3,389 (Direct) 432 (Indirect)
Percent	0.54 (Total Regional)	0.70	1.29

The total annual gain in sales volume from direct and indirect sales increases in the region would represent an estimated 0.54 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 0.27 percentage points less than estimated by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would increase by approximately $7.04 million as a result

of the gain in revenue from sales reductions, which would be $3.46 million less than the additional state sales tax revenue projected by the EIFS model. Regional income is projected by RECONS to increase by 0.70 percent, slightly less than the 0.72 percent increase anticipated under EIFS. While 3,000 direct military and government civilian positions would be gained within the ROI, RECONS estimates another 389 direct contract and service jobs would be gained, and an additional 432 new jobs would be created from indirect increases in demand for goods and services in the ROI as a result of force increases. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 3,821 jobs, or a 1.29 percent change in regional employment, which would be 0.36 percentage points greater than projected by the EIFS model.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 2 would lead to a net increase of economic activity within the ROI.

***Population and Demographics*.** There would be no significant socioeconomic impacts for population in the ROI for this alternative.

Housing. This alternative would decrease availability of single occupancy barracks and single Soldier housing. If the number of permanent party Soldiers were to increase on Fort Carson, the Active Duty military waiting lists would be longer. Fort Carson anticipates minor beneficial impacts to the housing and rental market in the region, with the most impact in El Paso County where rental vacancy and current military tenant populations are highest.

***Schools*.** Fort Carson anticipates that there would be minor beneficial impacts to all the schools within the ROI with the implementation of Alternative 1. Fort Carson anticipates less than significant adverse impacts to schools in the region as a result of growth and the potential for overcrowding as a result of the implementation of Alternative 2.

Public Health and Safety. As a result of the implementation of Alternative 2, resident and daytime population levels on Fort Carson would increase and could potentially increase demand on law enforcement, fire and emergency service providers, and on medical care providers on- and off-post. Fort Carson anticipates less than significant impacts to public health and safety.

***Family Support Services*.** As a result of the implementation of Alternative 2, an increase in permanent-party Soldiers could increase demand on select Family support service providers on post. There would be more demand for child care and other ACS programs. Off-post Family support services throughout the region would not likely experience a significant increase in clients. Fort Carson anticipates less than significant impacts to Family support services under this alternative.

Recreation Facilities. An increase in permanent-party Soldiers could potentially increase use of recreation facilities on post. Any increase in utilization would be minor. Fort Carson does not anticipate significant adverse or beneficial impacts to recreation facilities under this alternative.

Environmental Justice. As a result of the implementation of Alternative 2, Fort Carson does not anticipate a disproportionate adverse impact to minorities, economically disadvantaged populations or children would occur in the ROI. Fort Carson anticipates that job changes would be felt across economic sectors and at all income levels and spread geographically throughout the ROI. The proposed force increase in military authorizations on Fort Carson would not have disproportionate or adverse health effects on low-income or minority populations in the ROI.

Piñon Canyon Maneuver Site

No Action Alternative and Alternatives 1 and 2

These alternatives would result in negligible impacts to existing socioeconomic resources. Soldiers training at PCMS train there for a short time window of a few days or weeks.

Dependents do not accompany Soldiers; therefore, there would be limited impact on community services, schools, or economic impact in general.

4.5.12 Energy Demand and Generation

4.5.12.1 Affected Environment

Fort Carson

Fort Carson's energy needs are currently met by a combination of electrical power and natural gas, both of which are provided by municipal utility. Fort Carson has 3 MW solar power array that supports a portion of its energy needs and is pursuing projects that increase the amount of renewable energy generated and consumed on the installation.

Electricity. Power is supplied to Fort Carson from three recently constructed or upgraded substations in the main post area. The peak historical electrical demand is 37 MWs. Fort Carson's electrical infrastructure has been upgraded to provide reliable and sufficient electrical services to support its recent growth. Additional electrical infrastructure improvements are planned to support CAB construction. These improvements are planned for FY 2012 - 2016.

***Natural Gas*.** Fort Carson receives natural gas from Colorado Springs Utilities via four feeds (two on the north end of the installation, near Gate 4, one at Gate 5, and one at Gate 5). The peak historical daily consumption of natural gas at Fort Carson 13,000 thousand cubic feet, and the peak historical monthly consumption is 214,000 thousand cubic feet. The natural gas is metered and piped through a series of gas mains and distribution lines to support heating requirements throughout Fort Carson. Fort Carson's gas infrastructure has been upgraded to provide reliable and sufficient electrical services in support of its recent growth.

Piñon Canyon Maneuver Site

The PCMS's energy needs are currently met by electric power provided by a public utility service. The electricity is delivered via high voltage overhead power lines.

4.5.12.2 Environmental Consequences

Fort Carson

No Action Alternative

The No Action Alternative would result in negligible energy demand and generation effects. Fort Carson's ranges and garrison area would continue to consume the same types and amounts of energy. Maintenance of existing utility systems would continue.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have minor beneficial impacts to energy demand. There would be less of a requirement for energy and less on-post usage of energy. Utility systems, recently upgraded for Grow the Army would support utility and energy demand requirements of this alternative. Fort Carson would continue to search for innovative ways to conserve energy and would continue with separate initiatives as part of the Army's Net Zero initiative to increase renewable energy generation and the installations energy security.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Growth of up to 3,000 Soldiers is anticipated to have a minor impact resulting from energy demand and generation. Fort Carson's existing energy infrastructure has sufficient excess capacity, diversity, and scalability to readily absorb growth in Soldier and associated dependents at this level.

Piñon Canyon Maneuver Site

No Action Alternative and Alternatives 1 and 2

Negligible impacts anticipated as a result of the implementation of all alternatives. Minimal increased energy demand would occur.

4.5.13 Land Use Conflicts and Compatibility

4.5.13.1 Affected Environment

Fort Carson

Fort Carson occupies approximately 137,000 acres of land. The land uses consist of three categories: Improved lands, semi-improved lands, and unimproved lands. Land is used almost exclusively for military purposes and non-training uses. In addition, the Army maintains easements and special use permits on private lands. These easements and permits allow Fort Carson to maintain water rights, conduct monitoring on buffer lands, and use other federal properties for military purposes. The installation is divided into 56 training areas, three impact areas, the main post area, and areas from which training is restricted. The main post is located in the northern portion of the base, comprises approximately 6,000 acres, and contains most of the infrastructure, such as Soldier and Family housing; administrative, maintenance, community support, recreation, supply, and storage facilities; utilities; and classroom and simulation training facilities. Principal industrial operations include the repair and maintenance of vehicles.

The downrange area consists of approximately 131,000 acres of unimproved or open lands that are used for large caliber and small-arms live-fire individual and collective training; aircraft, wheeled and tracked vehicle maneuver operations; and mission readiness exercises. Additionally, Butts Army Airfield is located in the northeast quadrant of the downrange area and is used for command and control of flight operations as well as maintenance and repair of aircraft. Remaining land is used for recreation and other purposes.

Piñon Canyon Maneuver Site

Land use at PCMS has been divided into two primary categories, the cantonment and the training areas. The cantonment area consists of 1,660 acres of developed land; the training areas consist of open land. The cantonment area provides limited, austere Soldier and support facilities; military training is restricted in this area. The training areas consist of approximately 230,000 acres of unimproved or open lands that is used for military training maneuvers and small-arms live-fire activities. The terrain at the PCMS varies widely with open, rolling prairies, limestone-shale pinyon-juniper hills, sandstone canyons/breaks, and semi-arid, basaltic hills. To a large degree, the terrain defines the suitability of training activities that occur within the training areas. The four main training land use types within the training areas include maneuver training, dismounted training, small-arms live-fire ranges, and restricted areas. Maneuver training lands comprise the majority of training land at PCMS.

Restricted areas protect lands that support wildlife, ecosystems, soils, facilities, and cultural resources. Varying degrees of training use are allowed in restricted areas. For example, in areas with known occurrences of buried cultural resources, digging is not permitted (Fort Carson, 2009b).

Some areas within the PCMS are accessible to the public for recreational use when training activities do not occur. Currently, the recreational uses on the PCMS include hunting and camping (hunters only). According to the 2010 Fort Carson Regulation 200-6, camping for hunters is allowed only at designated sites. Currently, this is a dedicated campground at the Hill Ranch, approximately 1 mile south of the main gate at PCMS.

4.5.13.2 Environmental Consequences

Fort Carson

No Action Alternative

Under the No Action Alternative, no changes to land use conditions would occur; therefore, negligible impacts are anticipated.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Negligible impacts to land use are anticipated as a result of the implementation of Alternative 1. No changes to land use would be anticipated to occur through implementation of this alternative at Fort Carson. A reduction in training land use would be anticipated that roughly correlates with the number of Soldiers inactivated or realigned as a result of this alternative.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be an anticipated minor short- and long-term environmental impact on installation land use due to the presence of an additional 3,000 Soldiers and their Families assigned to the installation. Facility construction for the additional Soldiers would occur within the main post area. There would be no change in land use from this construction. Indirect impacts may occur as a result of increased utilization of range facilities, which in turn would decrease the availability of maneuver land area at Fort Carson due to range surface danger zone activation while the ranges are in use.

Piñon Canyon Maneuver Site

No Action Alternative

Under the No Action Alternative, no changes to land use conditions would occur; therefore, negligible impacts are anticipated.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Negligible impacts are anticipated as a result of the implementation of Alternative 1. No changes to land use would be anticipated to occur through implementation of this alternative at PCMS. A reduction in training land use would be anticipated that roughly correlates with the number of Soldiers inactivated or realigned as a result of this alternative.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be negligible impacts to land use conflicts and compatibility anticipated as a result of this alternative as this alternative would not increase the frequency of training above the historical limits of 4.7 months of mechanized maneuvers at PCMS.

4.5.14 Hazardous Materials and Hazardous Waste

4.5.14.1 Affected Environment

Fort Carson

Fort Carson has a comprehensive program to address management, use, and storage of hazardous waste and toxic substances, as well as a systematic program to investigate and remediate, if necessary, known or suspected contaminated sites across the installation. Hazardous and toxic materials used at Fort Carson include gasoline, batteries, paint, diesel fuel, oil and lubricants, chemical agents, explosives, JP-8 jet fuel, pyrotechnic devices used in

military training operations, radiological materials at medical facilities, radioactive materials, pesticides, and toxic or hazardous chemicals used in industrial operations.

Both Fort Carson and PCMS operate under a Hazardous Waste Management Program that manages hazardous waste to promote the protection of public health and the environment. Army policy is to substitute nontoxic and nonhazardous materials for toxic and hazardous ones; ensure compliance with local, state, and federal hazardous waste requirements; and ensure the use of waste management practices that comply with all applicable requirements pertaining to generation, treatment, storage, disposal, and transportation of hazardous wastes. The program reduces the need for corrective action through controlled management of solid and hazardous waste (Fort Carson, 2011a).

Piñon Canyon Maneuver Site

Hazardous materials used at the PCMS include gasoline, diesel fuel, oil, and lubricants used during routine maintenance; pesticides, as well as tear gas, which is used for chemical defense training. Pyrotechnic training devices are employed in military training operations at PCMS; however, high explosives are not used. Residual hazardous materials including diesel fuel, oil, lubricants, solvents and batteries generated during routine maintenance are recovered for reuse or recycling. Other hazardous materials brought to the PCMS by units are recovered as material and taken to their home station for further use, or classification and turned-in for reissue or proper disposal (Fort Carson, 2009b).

4.5.14.2 Environmental Consequences

Fort Carson

No Action Alternative

Overall, minor impacts are anticipated under the No Action Alternative. There would be no change in Fort Carson's management of hazardous materials, toxic substances, hazardous waste, or contaminated sites. Fort Carson would continue to manage existing sources of hazardous waste in accordance with the installation HWMP.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor beneficial impacts are anticipated as a result of the implementation of Alternative 1. In the short term, there would be an increase in the demolition of outdated and no longer needed facilities. This would increase the volume of solid waste generated. In addition, an increase in asbestos and LBP disposal is anticipated until facility reduction is completed as a result of this alternative. Construction workers and Army personnel would take measures to dispose materials in accordance with regulatory requirements installation management plans. Minor beneficial long-term impacts would be anticipated as the reduction in Soldiers would result in a reduction of hazardous material and waste generated.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There may be minor long-term impacts from hazardous materials and waste. It is anticipated that Fort Carson would not considerably increase its storage and use of hazardous chemicals during training exercises and installation maintenance with an increase of 3,000 Soldiers. Waste collection, storage, and disposal processes would remain mostly unchanged, and current waste management programs would continue. Direct beneficial and adverse impacts would be anticipated. Direct beneficial impacts include activities associated with land transactions where the Army would continue to operate under its RCRA program to return contaminated lands to fully usable status. Direct adverse impacts include increased facility construction and

modification. The increase in these wastes would be anticipated to result in no adverse impacts because the wastes would be managed in accordance with current standards and regulations. The training of an additional 3,000 Soldiers would result in an increase in special hazards, specifically munitions and UXO. Fort Carson's munitions storage areas would accommodate the increased storage requirement of the additional throughput on existing ranges, range construction, upgrades, and improvements.

Piñon Canyon Maneuver Site

No Action Alternative

Overall, minor impacts are anticipated under the No Action Alternative. There would be no change in Fort Carson's management of hazardous materials, toxic substances, hazardous waste, or contaminated sites at PCMS. Fort Carson staff would continue to manage existing sources of hazardous waste in accordance with the installation HWMP.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

There may be minor long-term beneficial impacts from the reduction of 8,000 Soldiers as it would result in a reduction of hazardous materials and waste generated.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Increased live-fire activities as a result of the implementation Alternative 2 would result in the generation of small amounts of additional expended small arms ammunition. Small arms munitions consist primarily of brass bullet casings and lead bullet cores. A majority of brass bullet casings are picked up and turned in. Minor long-term adverse impacts from these increased activities would be anticipated. The proposed gain would not result in an increase use at PCMS by mechanized ground units above the 4.7 months originally analyzed in 1980.

4.5.15 Traffic and Transportation

4.5.15.1 Affected Environment

Fort Carson

Fort Carson is located in central Colorado, approximately 65 miles south of Denver, and adjacent to the City of Colorado Springs. The ROI of the affected environment for traffic and transportation aspects of the Proposed Action include Fort Carson and the western portion of El Paso County, to include the communities of Colorado Springs, Stratmoor, Cimarron Hills, Fountain, Widefield, Security and the City of Fountain. Major roads that border Fort Carson are I-25 to the east, State Highway 115 to the west, and Academy Boulevard to the north. Other major routes in the area include U.S. 24, State Highway 85, State Highway 16, and State Highway 21.

A number of improvements have been made to the roadways surrounding Fort Carson to support the projected traffic increases resulting from the 2005 BRAC and various re-stationing initiatives. These include recently completed major capacity improvements on State Highway 16 and Academy Blvd as well as ongoing safety and capacity improvements to State Highway 115. These on-going improvements are scheduled for completion in December 2012. The combined projects along these three routes are anticipated to meet projected off-post traffic demands as well as provide greatly improved access to Fort Carson's seven existing ACPs.

In order to support on-going development of the locations south of the post's main post area and the planned arrival of a CAB, Fort Carson plans to open an additional ACP, Gate 19, in the near future. This gate will be accessed via Carter Oak Ranch Road, an El Paso County road

linking the gate with I-25 and the City of Fountain. Improvements to this road will be completed under a pending project being funded through the Defense Access Road program.

Piñon Canyon Maneuver Site

The PCMS is set in rural Colorado near the state's southern border with New Mexico, with the nearest town being Trinidad, Colorado, located approximately 30 miles west, southwest of the maneuver site. The ROI of the affected environment for traffic and transportation aspects of the Proposed Action include PCMS, the surrounding network of rural roads leading to the installation, and the Town of Trinidad, Colorado. Major roads in the area include I-25, a north-south interstate highway that provides a direct link between Fort Carson and the Town of Trinidad, as well as U.S. 350 and U.S. 160 that connect PCMS to Trinidad.

4.5.15.2 Environmental Consequences

Fort Carson

No Action Alternative

Less than significant impacts are anticipated under the No Action Alternative. Surveys and studies conducted on the existing Fort Carson on-post transportation system determined that it is heavily congested, particularly during peak traffic hours. Recommendations to improve the system are being pursued. The installation has already completed both the NEPA review and/or construction for many projects to support recent Soldier and military dependent population increases as part of BRAC 05 implementation, Grow the Army and CAB stationing. Deficiencies in road capacity, access points, parking, and on and off-post traffic continue to be addressed.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have significant beneficial traffic impacts resulting from a reduction in congestion and transportation system use at Fort Carson. It is anticipated that traffic congestion would be diminished and travel time would decrease. The roads would continue to be maintained and LOS for on and off-post commuters would improve as traffic volume decreased.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be significant but mitigable short- and long-term impacts on traffic and transportation systems on the installation due to the presence of an additional 3,000 Soldiers. The increase in on-post traffic could contribute to a decrease in the LOS of the road network during peak morning and afternoon travel periods, and would cause a decrease in LOS on some of the installation's arterial routes.

The proposed gain of 3,000 Soldiers would result in increased peak hour traffic congestion and related delays at the ACPs and along major on-post roadways. This increase would also create an additional demand for POV parking.

Recent and on-going improvements to the off-post roads bordering Fort Carson would be anticipated to meet projected traffic requirements resulting from the proposed increase.

Additional processing lanes and other improvements would be required at the post's two busiest ACPs (at Gates 20 and 4), to provide the additional thru-put required to meet the increased traffic demand.

Roadway capacity improvements (additional lanes, traffic signals, etc.) would likely be required to handle the additional traffic demands. The location and nature of these improvements would be based on the locations of the new unit areas and projected travel patterns of the new personnel.

Piñon Canyon Maneuver Site

No Action Alternative

Negligible impacts to traffic are anticipated under the No Action Alternative. Soldiers would continue to convoy to and from PCMS to support training operations.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

The proposed loss of 8,000 Soldiers at Fort Carson would result in a decrease in the number of convoys travelling to and from PCMS resulting in minor beneficial impacts.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

The proposed gain of 3,000 Soldiers at Fort Carson would have negligible impact to traffic at PCMS. The alternative would slightly increase convoys to and from PCMS as the number of vehicles conducting training at PCMS would increase.

4.5.16 Cumulative Effects

Region of Influence

The ROI for this cumulative impact analysis encompasses El Paso, Fremont, and Pueblo counties, at Fort Carson. Colorado Springs and Pueblo are the largest cities within the ROI. Fort Carson has long been a key component of the economy of the metropolitan area, employing several thousand Soldiers and civilian employees within the ROI and has been in operation supporting the Army since 1942.

The PCMS is located about 150 miles south of Fort Carson. Soldiers training at PCMS are largely confined to the maneuver site, with limited impact to the surrounding county. The nearest local community approximately 30 miles away.

Fort Carson and Piñon Canyon Maneuver Site

Under the No Action Alternative there are no significant direct, indirect, and cumulative impacts identified. There would be minor to negligible beneficial impacts under Alternative 1 for the following VECs: land use, air quality, noise, geology and soils, water resources, biological resources (including special status species and wetlands), cultural resources, airspace, utilities, and hazardous materials and hazardous waste.

There is the potential for significant beneficial cumulative impacts to transportation in the ROI for Fort Carson, with negligible beneficial impacts from the reduction in convoy traffic to PCMS as a result of Alternative 1.

There would be no significant adverse cumulative impacts to socioeconomics in the ROI for Fort Carson anticipated under Alternative 1. Any impacts from a loss of up to 8,000 Soldiers and civilians would not change the installation's mission or significantly impact the Colorado Springs area which has a dynamic economy. There would be negligible cumulative impacts to the PCMS.

Fort Carson

Several projects have been identified that are either in progress now, or would be in progress within the next 5 years and have the potential to result in cumulative effects, when considered in conjunction with the Proposed Action. Most of these projects have been previously identified in the installation's Real Property Master Planning Board and preliminarily assessed for environmental impacts via the NEPA process; however, some of the projects are still pending

final approval and subsequent compliance with NEPA. The following projects have the potential to result in cumulative impacts:

Future Actions at Fort Carson:

- CAB associated construction including control tower, bulk fuel facility, hot refuel point, Central Energy Plant, and infrastructure;
- CAB stationing;
- Chapel at Fort Carson;
- Special Forces Tactical UAS Facility;
- Child Development Center;
- Biofuel Co-generation project;
- Turkey Creek Fire Station;
- Iron Horse Park Development;
- Net Zero Energy, Water, and Waste Projects;
- High Altitude Mountain Environmental Training agreement with the BLM;
- Rod and Gun Club; and
- Tactical UAS Hangar and Facility.

Future Actions at Piñon Canyon Maneuver Site:

- Vehicle Wash Facility;
- Helicopter concrete pads; and
- Equipment Staging Area.

Present Actions at Fort Carson:

- Soldiers Family Assistance Center; and
- Warriors in Transition Unit Complex (Barracks/Administrative).

Other Public/Private Actions (Present and Reasonably Foreseeable Actions):

- Southern Delivery System water pipeline construction bringing Arkansas River water stored in Pueblo Reservoir to Colorado Springs, Fountain, Security, and Pueblo West in 2016.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Air Quality. Cumulative impacts to air quality at Fort Carson are a substantive issue as a result of continuing growth and development in the surrounding region. The Colorado Springs region is anticipated to grow in population by approximately 350,000 people by 2030, with more vehicles and stationary emissions sources being needed to support this increase. Main post construction projects listed above, such as the Child Development Center, the Rod and Gun Club facility, the Iron Horse Park development would require an air quality conformity analysis be conducted. This analysis is required for any project with the potential to impact air quality to ensure that projects are within designated thresholds for air quality attainment individually and cumulatively. Should the analysis result in a nonconformity finding, mitigation measures would be developed and implemented to reduce the impacts and achieve conformity. The conformity analysis and any subsequent required mitigation would prevent deterioration of air quality related to O_3 levels or other pollutants, resulting from the interaction of multiple projects. Other projects in the region, such as the construction of the Southern Delivery System water pipeline,

will add fugitive dust and vehicle emissions to the impacts to Fort Carson's projects in the installations airshed.

Airspace. The increased operations as a result of the implementation of Alternative 2, to include Tactical Unmanned Aerial Vehicle use and High Altitude Mountain Environmental Training could cause some minor impacts on air traffic flow within the Butts Army Airfield around Fort Carson.

Cultural Resources. Direct and indirect incremental impacts to cultural or historical resources would be projected to have less than significant cumulative consequences. Construction of the Southern Delivery System and Fort Carson projects, in conjunction with the implementation of Alternative 2 could directly damage unknown, undocumented artifacts, though surveys would be conducted to identify and avoid artifacts of cultural significance. A large portion of the installation is yet to be surveyed to identify potential impacts and mitigations. Adverse effects to cultural resources or historic properties would require additional consultation under 36 CFR 800.

Noise. Cumulatively, noise levels may be elevated during days of heavier training, heavy construction noise, and traffic associated with the implementation actions occurring within the ROI. Disturbance to wildlife receptors on or off post and to residential receptors is anticipated to be short term and not permanent. Though during these times of increased noise intensity, peak noise would not remain elevated, nor would this increase require a modification to the installation's noise plan.

Soil Erosion. Minor cumulative impacts to soil erosion and surface water would be anticipated from the combination of construction of facilities down range, such as those listed to support the CAB, the Turkey Creek fire station, and a tactical UAS hangar, and additional maneuver traffic. The installation anticipates the potential for increased siltation and sedimentation which could have water quality impacts, resulting in indirect impacts to many of the installation's federal and state-listed species, which rely on those water sources for foraging and survival.

Biological Resources. Since the additional 3,000 Soldiers would conduct training exercises already occurring on the installation, there would likely be no major modifications that would impact current sensitive species management practices. With recently constructed ranges and future planned construction such as the Special Forces tactical UAS facility; however, Alternative 2 could amplify scheduling difficulty to access training areas for wildlife management since there would be an increase in training area use. It is anticipated; however, that continuing communication with Range Control can help minimize adverse wildlife management impacts. Cumulative impacts are a substantive issue as a result of the large amount of recent Army population growth on Fort Carson and in the surrounding region. Some cumulative adverse impacts could occur to fish, wildlife, and plants populations. Cumulative adverse impacts to biological resources could occur, but can be mitigated through proper management.

Wetlands. Negligible cumulative impacts are anticipated.

Water Resources. Minor cumulative effects to water resources are anticipated to occur.

Ongoing and reasonable future construction actions have the potential to impact impaired water bodies and/or stream buffers; however, designs are thoroughly reviewed during construction planning to minimize any potential impacts to surface water. Effective implementation of the NPDES permit requirements, and the erosion and sedimentation pollution control plans during construction, and post-construction BMPs would also reduce the potential adverse impacts to surface water. With regards to water demand, the implementation of the Southern Delivery System should regionally increase the availability of water within the ROI. The project is scheduled for completion in 2016 and should bring additional water from the Pueblo Reservoir to the ROI to support regional population growth.

Facilities. Additional Soldiers are coming to Fort Carson as part of CAB stationing and these Soldiers would utilize facilities available on Fort Carson along with the 3,000 Soldiers to be stationed at Fort Carson as a result of Alternative 2. This would place additional strain on Fort Carson's existing facilities. Cumulative facilities impacts at Fort Carson would be less than significant. More outdated facilities would need to be retained on post, to accommodate the Soldier growth, and there would be less opportunity to demolish energy inefficient or low performing, outdated facilities.

Socioeconomics. Cumulative impacts would be anticipated to be minor beneficial. Fort Carson already accommodates a large Soldier population. If Fort Carson were to gain 3,000 Soldiers there would be limited impact from that increase, as the Colorado Springs area is projected to continue to grow rapidly through 2030. The communities of Colorado Springs and the business support services and schools are planning to accommodate this rapid regional growth. The Soldier growth in conjunction with other projects would lead to minor beneficial economic impacts from increased sales volume, income, and employment in the region.

Energy Demand and Generation. Minor cumulative impacts are anticipated. Ongoing and future construction such as the Net Zero Energy, Water, and Waste projects, the biofuel Co-generation project, and the central energy plant, would help increase energy efficiency, though regionally, there would be an increased projected demand for energy that would increase with an additional 3,000 Soldiers and their Family members. Materials and energy are not in short supply, however, and their increased use would have only a minor adverse impact upon continued availability of these resources.

Hazardous Materials and Hazardous Waste. Cumulative impacts from hazardous materials and waste would be minor (low). Hazardous materials and waste would increase with the addition of 3,000 Soldiers, as well as from ongoing and future construction and operation of the facilities listed above. Hazardous materials and waste management protocols would not change as a result of these actions, however. Units would continue to adhere to installation, state, and federal guidelines for hazardous materials and waste.

Traffic and Transportation. With the increase in military personnel from CAB stationing and rapid regional growth, there would be less than significant impacts to off-post traffic. There would be an associated increase of traffic on post, with significant but mitigable impacts. CAB stationing in conjunction with 3,000 Soldiers would add more than 5,000 Soldiers to Fort Carson between 2012 and 2020. Road and traffic improvements would be needed to support Alternative 2.

Cumulative impacts associated as a result of the implementation of Alternative 2 on PCMS are as follows:

There are no known projects ongoing, or in the foreseeable future, that would produce significant direct and indirect incremental environmental impact at PCMS. The proposed gain of 3,000 Soldiers at Fort Carson and the construction projects listed above for PCMS would have minor to negligible impact to most VECs at PCMS. There is the potential for significant, but mitigable impacts to soils and less than significant impacts to biological resources due to construction and training activities. However, impacts from construction would be temporary and training impacts would be mitigable. The proposed gain would not result in an increase use at PCMS by mechanized ground units above the 4.7 months originally analyzed in 1980.

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4.6 FORT DRUM, NEW YORK

4.6.1 Introduction

Fort Drum, located in northern New York, has approximately 107,265 acres, with 77,565 acres of maneuver area suited for vehicle and non-vehicular military training (Figure 4.6-1). Fort Drum supports armored and mechanized unit training, dismounted infantry unit training, aviation training, UAS training, and training simulations.

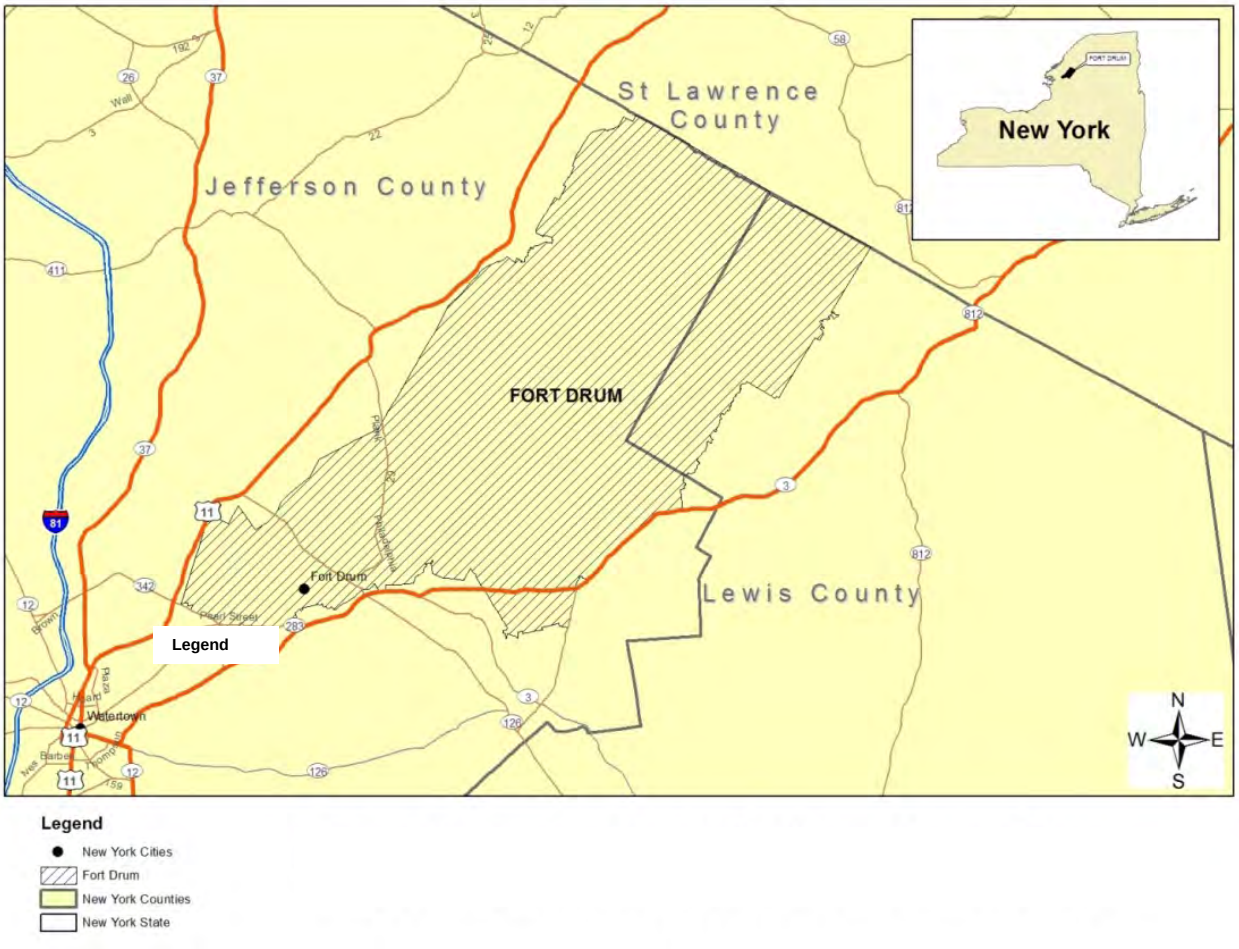

Figure 4.6-1. Fort Drum

Fort Drum's major units form a majority of the 10th Mountain Division (Light Infantry) and its headquarters. The Division consists of four IBCTs, a CAB, a SUSBDE, and a Headquarters and Headquarters Battalion. Three BCTs of the 10th Mountain Division are stationed at Fort Drum. The 4th BCT is stationed at Fort Polk, Louisiana.

Fort Drum has a well-developed range infrastructure. The ACUB Program, in 2010 secured three parcels under easement totaling 717 acres that create a buffer on land bordering the installation which will sustain natural habitats and protect the installation's accessibility, capability, and capacity for Soldier training and testing (U.S. Army, 2010). To date, 1,500 acres have ACUB easements and additional easements are planned to ensure that training range activities are not jeopardized from private development that occurs outside of the installation's fenceline.

4.6.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Drum does not anticipate any significant adverse environmental impacts as a result of the implementation of Alternative 1 (Force reduction of up to 8,000 Soldiers and Army Civilians) or Alternative 2 (Installation gain of up to 3,000 Soldiers). However, significant socioeconomic impacts to sales volume, income, employment, population, and school districts are anticipated as a result of the implementation of the Alternative 1. Table 4.6-1 summarizes the anticipated impacts to VECs for each alternative.

Table 4.6-1. Fort Drum Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 8,000	Alternative 2: Growth of up to 3,000
Air Quality	Minor	Minor	Minor
Airspace	Negligible	Negligible	Negligible
Cultural Resources	Minor	Minor	Minor
Noise	Negligible	Negligible	Negligible
Soil Erosion	Negligible	Negligible	Negligible
Biological Resources	Minor	Minor	Minor
Wetlands	Minor	Beneficial	Minor
Water Resources	Negligible	Negligible	Negligible
Facilities	Negligible	Beneficial	Minor
Socioeconomics	Minor	Significant	Less than Significant
Energy Demand and Generation	Minor	Beneficial	Less than Significant
Land Use Conflict and Compatibility	Negligible	Negligible	Minor
Hazardous Materials and Hazardous Waste	Negligible	Negligible	Negligible
Traffic and Transportation	Minor	Minor	Minor

4.6.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section below, no more than a beneficial or negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- ***Airspace.*** The regional assets, supporting facilities, infrastructure, airspaces, and equipment make Fort Drum and Wheeler-Sack Army Airfield one of the best training area locations in the Army and possibly the DoD. The installation's base airspace complex includes generally the airspace within an approximate 40/50 mile-radius of Wheeler-Sack Army Airfield from the surface up to and including 10,000' MSL, as well as

Restricted Area 5201 (R-5201). This airspace is allocated by Boston Air Route Traffic Control Center to the Fort Drum Army Radar Approach Control (ARAC); the ARAC is one of only six ARACS in the Army. The ARAC provides air traffic control services for Fort Drum, Wheeler-Sack Army Airfield and the region. The ARAC airspace is adjoined and controlled by two Canadian Air Traffic Control Facilities, Syracuse Approach Control and Boston Air Route Traffic Control Center (White, 2012).

The Fort Drum extended airspace complex and the surrounding Approach Control, SUA, and MOA are considerable. The collective airspace of the Restricted Areas, (R-5201, R-5202A, R-5202B, MOAs and Air Traffic Control Assigned Airspace that surround Fort Drum to the North, East, and South provide more than 45,000 cubic miles of available airspace to conduct military operations; and when connected to the immediate west exceeds 95,000 cubic miles (White, 2012).

In addition to the ARAC airspace, Fort Drum manages and provides Airspace Management for Restricted Area 5201 (R-5201). R-5201 is 147 square miles of SUA, from the surface up to and including 23,000 feet MSL. In addition R-5201 is capped by R-5202A which is an additional 147 square miles of SUA, from the 23,000 feet MSL up to and including 29,000 feet MSL and abutted by R-5202B which is approximately an additional 105 square miles of SUA, from 6,000 feet up to and including 29,000 feet MSL. The installation has access to this airspace continuously, with minor restrictions based on normal established operation coordination procedures. The SUA is by law required to be controlled by the FAA's Boston Air Route Traffic Control Center; however day to day operational control is given to the Fort Drum Air Traffic Control Facility. Restricted airspace R-5201 and R-5202A are found within the installation boundary (White, 2012).

Installation airfield operations would be unchanged. Activities associated as a result of the alternatives would have no anticipated impact to air operations with the only exception being a potentially negligible decrease in requirements to train UAS .

- ***Noise.*** The noise environment on Fort Drum is characterized as aircraft, artillery, and blast such as the sound of a weapon firing or the projectile exploding in the impact area. Artillery weapons tend to generate the highest level of noise heard on and off the installation; however, the highest sound exposure levels are generated from the aircraft maneuvers (fixed- and rotary-winged). Fort Drum is used by the Army, National Guard, and by the U.S. Air Force for aircraft training including air-to-ground weapons training (U.S. Army, 2007).

  The current noise contours for Fort Drum indicate that NZ II extends off the installation boundary into the Town of Diana; however, most development in this area remains agricultural with very low density single-family residences and further development is generally discouraged. NZ II also extends off post to the Town of Wilna along New York State Route 3 from artillery impact areas, and along the installation boundary into the Town of Rossie and north of the Village of Antwerp. No incompatible land uses occur in any of these three areas. NZ III created from blast noise or artillery fire does not extend off the installation boundary.

  Residential housing outside the installation is largely composed of Soldiers and their Families, and civilians associated with the installation. Noise generated from the airfield is heard off post to the north in the Town of Philadelphia along Great Bend Road. This area contains very few houses and one school. Aircraft flyover noise is also heard in the Town of Antwerp. Noise generated from helicopter operations within the training area is contained almost entirely on post with the exception of a small area south of the Village of Sprague ville (U.S. Army, 2007).

None of the alternatives involves major changes in noise sources or contours as the types of weapons systems and training conducted on ranges would not change. There would be a projected change in frequency of training; however, this would not be projected to change installation noise contours. Substantial mission changes have occurred at the installation since September 11, 2001 that involve the realignment reduction of National Guard, Reserve, and Marine tank and aircraft operations that have lessened the noise generated by military training. Installation operations would be unchanged with a small increase in range and maneuver activities that would have virtually no impact on the installations current noise contours or on sensitive noise receptors. Activities associated with all of the alternatives would have negligible noise impacts.

- ***Soil Erosion.*** Fort Drum is located in the Lake Erie-Lake Ontario lowlands. Plainfield sands dominate this location, and they have a high permeability and low water holding capacity which leads to high water conductance. Wind erosion occurs in lowland unvegetated areas.

  Additional Soldiers and equipment would use the existing lands and facilities; however, there would be limited new exposure of soils projected as a result of the implementation of either alternative. Training during a good portion of the year would occur when the ground is frozen and more resistant to maneuver damage from Army vehicles. Land regeneration through physically seeding or planting trees in most areas would not be required. Land is monitored and managed to facilitate natural regeneration. The alternatives do not involve activities or projects that would result in more than negligible changes of soil resources.

- ***Water Resources.***

  Water Supply. Potable water is supplied to Fort Drum from the Development Authority of the North Country (DANC), which subcontracts water and sewer treatment services to the City of Watertown. Fort Drum estimates that the average current water usage from DANC to be approximately 1.35 mgd. DANC can supply up to 4 mgd through its 20-inch transmission main to the installation. The Black River supplies water to the Watertown water treatment plant, which has a capacity of 16 mgd (U.S. Army, 2011a).

  In addition to the existing water supply wells, Fort Drum has drilled several new wells. The on-post well field is a backup water supply that has a total combined groundwater extraction capacity of up to approximately 4 mgd. The chlorination plant at the well field is limited to a maximum throughput of 2.3 mgd. Total average well water use was approximately 0.3 mgd in FY 2008. Development within the on-post well field is restricted within 300 to 500 feet of a water supply well (U.S. Army, 2011a).

  DANC and the City of Watertown finished a regional study in 2007 for the water and sewer systems that determined that there is sufficient capacity in the transmission and treatment systems to support projected growth in Fort Drum and its immediate surrounding area. The existing infrastructure for water supply could easily support a 50 percent increase in demand (U.S. Army, 2011a). The impacts of an increase or a decrease in Soldiers would be anticipated to be negligible with regards to surface water and water supply.

  Wastewater. Fort Drum maintains separate sanitary and storm sewer systems to accommodate wastewater, and implements a number of policies and performs regular monitoring to prevent any unregulated contaminants from entering the sanitary and storm sewer systems. The average daily wastewater flow from Fort Drum in FY 2008 was approximately 1.6 mgd. The primary non-domestic discharges from Fort Drum

included oil and water separators and treated groundwater from environmental remediation sites (U.S. Army, 2011a).

Sanitary wastewater collected on Fort Drum is sent off post via four pump stations to a WWTP owned and operated by the City of Watertown. The rated capacity of the Watertown WWTP is 13.4 mgd, and usage averages 9.5 mgd. The existing wastewater conveyance infrastructure could easily support a 3,000 Soldier increase, and a decrease in Soldiers would also have negligible impacts.

Stormwater. Fort Drum's stormwater system conveys runoff through open drainage ditches and underground pipes that discharge directly to on-post grounds, streams, or ponds. In addition, man-made stormwater treatment ponds have been installed, as required in conjunction with the growth in facilities on the installation (U.S. Army, 2011a).

Fort Drum has obtained permit coverage for 42 stormwater discharge sites resulting from industrial activities under the New York State Pollutant Discharge Elimination System Multi-Sector Permit for Stormwater Discharges Associated Industrial Activity. Coverage for on-base individual construction projects that meet or exceed 1 acre of disturbance is obtained through the State Pollutant Discharge Elimination System Permit for Construction Activity. Currently, Fort Drum is not subject to a State Pollutant Discharge Elimination System Permit for MS4 (U.S. Army, 2011a).

With current management practices, it is unlikely that an unpermitted deposition of sediment into waters would occur outside of a natural disaster that exceeds current 100-year flood flow and discharge capacity construction standards.

All of the alternatives would have a negligible impact to the water resources or water waste streams at the installation. Given the population of Fort Drum and current level of system support, additional Units would not have significant impacts to water demand and associated treatment. There are adequate facilities at Fort Drum to accommodate this level of growth.

- ***Hazardous Materials and Hazardous Waste.*** The affected environment includes the use, storage, transport, and disposal of hazardous materials and wastes at Fort Drum. This includes hazardous materials and wastes from USTs and ASTs, deicers, pesticides, LBP, asbestos, PCBs, radon, and UXO.

  Maintenance support and specialized flight support operations currently use large quantities of aviation fuel, ground vehicle fuel, lubricants, hydraulic fluids, antifreeze, degreasers and solvents, chemical batteries, and paint-related materials. The volume of hazardous waste generated on an annual basis at Fort Drum qualifies the post as a large quantity generator. To handle this waste, Fort Drum utilizes two hazardous waste storage facilities. Fort Drum manages its hazardous waste as summarized in its HWMP updated every two years (U.S. Army, 2011a).

  All three alternatives would have negligible potential for adverse environmental impacts from hazardous materials and waste. Fort Drum has a new Hazardous Waste Management Facility that can handle the current waste generation rates as well as any future waste from an increase of 3,000 Soldiers and their resulting waste generating activities.

Fort Drum anticipates that the implementation of any of the alternatives would result in negligible impacts for those VECs discussed above. The following provides a discussion of the VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Proposed Action alternatives.

4.6.2 Air Quality

4.6.2.1 Affected Environment

The affected environment includes air emissions associated with Fort Drum, and the counties of Lewis, St. Lawrence, and Jefferson, New York. Northern New York, including Fort Drum, is designated as a marginal O_3 nonattainment area due to its location within the Northeast Ozone Transport Region. New York State Department of Environmental Conservation recommended that Jefferson County be designated as an attainment area for the 2008 O_3 NAAQS. This recommendation was made because the O_3 monitoring in 2008 indicated that the air is in compliance with the national standard and the O_3 levels have not changed substantially since EPA made final designations for the 1997 O_3 NAAQS in 2008 (Snyder, 2011). All other criteria pollutants have been designated as being in attainment (EPA, 2011).

Actual emissions from stationary sources at Fort Drum fall below the thresholds for major source determination. Potential emissions from stationary sources at Fort Drum exceed the Major Facility threshold for CO, NO_x, SO_2, and VOCs. Because permitting requirements are determined based on a facility's "potential to emit," Fort Drum is considered a major facility and operates in accordance with an approved Title V permit. Since Fort Drum is a major source, the General Conformity Rule applies as a result of being in an O_3 nonattainment area. The General Conformity Rule requires analysis of total direct and indirect emissions of criteria pollutants, including precursors, when determining conformity of the Proposed Action. The rule does not apply to actions where the total direct and indirect emissions of criteria pollutants are at or below established *de minimis* levels (Page, 2012).

4.6.2.2 Environmental Consequences

No Action Alternative

There would continue to be minor short- and long-term air quality impacts from training and emissions from mobile and stationary sources required to support installation operations and training.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Short-term minor impacts to air quality from a force reduction could occur as personnel and equipment are moved from the installation and select facilities are demolished by Fort Drum as part of the Army's facilities reduction efforts. Additional air pollutant emissions could result from activities required to support the relocation. The remaining population and existing facilities would continue to operate in accordance with Fort Drum's Title V permit and maintain all state and/or federal air quality requirements. Thus, any impacts to air quality are anticipated to be minor as a result of the implementation of Alternative 1. Long-term beneficial impacts would be anticipated with a reduction in mobile source emissions and less air pollutants from a lower utilization rate of stationary sources.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Short-term minor impacts to air quality from the addition of 3,000 Soldiers are anticipated as a result of the implementation of Alternative 2. The resulting increases in air emissions are proportional to the increase in population at the facility. Given the wide distribution of emissions, it is not anticipated that regional air quality would be significantly affected. Fort Drum is currently operating below the permit capacities and can accommodate three times the anticipated increase and still remain within the existing of its Title V permit capacities.

4.6.3 Cultural Resources

4.6.3.1 Affected Environment

The Fort Drum affected environment for cultural resources is the footprint of the installation. Fort Drum has completed archeological inventory of approximately 87 percent of its surveyable territory, excluding the permanent impact areas and the previously developed portion of the cantonment area. The archeological survey completed thus far has identified a total of 891 sites that began with earliest human occupation of the region approximately 11,000 years ago and continued through construction of World War II military training features in the 1940s (U.S. Army, 2010).

Fort Drum currently tracks a total of 940 archeological sites, one district with standing structures, and five archeological districts, and supports management of 13 historic cemeteries. Resources of concern include the historic districts, two TCPs, 13 cemeteries and an as-yet undetermined number of archeological sites considered eligible for listing on the NRHP (U.S. Army, 2010).

4.6.3.2 Environmental Consequences

No Action Alternative

Impacts to cultural resources under the No Action Alternative would be minor. Activities with the potential to affect cultural resources are monitored and regulated when anticipated through a variety of preventative and minimization measures.

Alternative 1: Force Reduction (Up to 8,000 Soldiers and Army Civilians)

Minor impacts are anticipated as a result of the implementation of Alternative 1 at Fort Drum. Removal of temporary facilities would have a very low potential for adverse effects to historic buildings and/or archeological resources. Removal of outdated infrastructure has the potential to affect historic structures, but such actions to demolish older structures would be conducted in accordance with the current agreements between Fort Drum and the state for consultation and management of historic structures. If the undertaking has the potential to adversely affect historic properties, formal consultation with the SHPO would occur.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

This level of growth on Fort Drum is anticipated to have a minor impact to cultural resources as a result of the implementation of Alternative 2. Measures are in place within the installation ICRMP 2011-2015 to accommodate training to prevent adverse impacts to cultural resources (U.S. Army, 2010). The types of training conducted by the additional Soldiers would not change, though some training areas on Fort Drum might be used with more frequency or intensity compared with current baseline conditions. Fort Drum would continue to follow the procedures it has in place in order to protect cultural resources. The installation ICRMP requires site-specific surveys prior to disturbance and provides evaluation criteria, management guidelines, and preservation and treatment strategies to facilitate positive and beneficial impacts on both archeological and architectural resources located on the installation. Review of projects by the CRM and the NEPA process are used to ensure protection of known and potential cultural resources.

It would not be anticipated that historic buildings would need to be demolished or reconfigured to accommodate more Soldiers as a result of the implementation of Alternative 2.

4.6.4 Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species)

4.6.4.1 Affected Environment

There are 51 special status species of flora and fauna that are known to occur within the Fort Drum area, 10 federal and 41 state-listed species. Fort Drum currently records only one endangered species as contiguous to the installation, and on-site, the Indiana Bat (*Myotis sodalis*). The USFWS has prepared a Biological Opinion on the Effect of Proposed Activities on the Fort Drum Military Installation, Fort Drum, New York (2012-2014) for the federally-endangered Indiana Bat (*Myotis sodalis*) for Fort Drum, 6 February 2012 (USFWS, 2012). This document can be found at: http://www.fws.gov/midwest/Endangered/mammals/inba/bos/12_NY_FortDrum.pdf.

4.6.4.2 Environmental Consequences

No Action Alternative and Alternatives 1 and 2

None of the alternatives involves major changes to the installation operations and all alternatives would be anticipated to have only minor impacts to biological resources. Negligible or minor impacts are anticipated on listed Indiana Bat or other species recorded as occurring on the installation as a result of all the alternatives. There would not be a change in the types of activities conducted on Fort Drum as a result of any of the alternatives, only a slight increase in the frequency of training activities associated with Alternative 2. The installation would continue to manage its natural resources and potential habitat in accordance with the installation INRMP, Biological Opinions, and any conservation measures identified in any ESA, Section 7 consultation documents.

4.6.5 Wetlands

4.6.5.1 Affected Environment

Wetlands are prevalent throughout the installation and comprise approximately 20 percent of the land area on Fort Drum. Fort Drum's landcover classifications indicate approximately 15,500 acres of wetlands exist on Fort Drum with another 4,675 acres of surface waters (U.S. Army, 2011a).

There are numerous wetland types (forested wetland, freshwater marshes, scrub-shrub, etc.) found throughout the installation. Wetland boundaries change frequently due to changing hydrology brought on by natural succession and beaver activity (U.S. Army, 2011a).

4.6.5.2 Environmental Consequences

No Action Alternative

The No Action Alternative would result in no additional impacts to wetlands on Fort Drum. Wetlands impacts from projects already under construction (or for which NEPA is complete and construction pending) have been assessed and, if required, appropriate mitigation and permitting have occurred. Additionally, training, personnel operations, and routine maintenance and monitoring activities on Fort Drum would occur, resulting in minimal impacts to wetlands. These are minimized by BMPs and regular maintenance of roads, ranges, training lands, and developed areas, although traffic through wetlands is avoided and activities in wetland restoration areas monitored to ensure restoration is not compromised.

Alternative 1: Force Reduction (Up to 8,000 Soldiers and Army Civilians)

Beneficial impacts to wetlands as a result of the implementation of Alternative 1 are anticipated. A reduction in force at Fort Drum would mean roads, ranges, and training areas would be less utilized. Less vegetation would be denuded and less sediment would run off into wetlands to impair their ecological function. As such, the loss or degradation of wetland systems would occur less frequently or to a decreased extent.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be a minor impact to wetland areas as a result of Alternative 2. Training would increase. Prior to scheduling training area for unit exercises, however, Fort Drum range and environmental personnel would continue to coordinate to avoid and minimize sensitive wetland area impacts when planning for training events. If it appears that wetland impacts are unavoidable, the appropriate level of permitting and mitigation would be obtained prior to the training event.

4.6.6 Facilities

4.6.6.1 Affected Environment

Unaccompanied enlisted personnel housing, or barracks, is the Army's number one housing facilities priority. Fort Drum's barracks and other troop facilities are able to readily accommodate the baseline military population on the installation with capacity for additional Soldiers. The installation has an extensive inventory of relocatable buildings that could also serve additional requirements. These modular buildings are semi-permanent structures that are projected to remain as adequate facilities for several decades to come.

Community facilities is a broad term encompassing a variety of activities ranging from shopping, banking, education and recreation activities to police, fire protection and health care facilities. Community facilities on Fort Drum are dispersed throughout the cantonment area and Wheeler-Sack Army Airfield.

4.6.6.2 Environmental Consequences

No Action Alternative

No impacts are anticipated under the No Action Alternative. Fort Drum would continue to use its existing facilities to support its tenants and missions.

Alternative 1: Force Reduction (Up to 8,000 Soldiers and Army Civilians)

Minor beneficial impacts would be anticipated from a force reduction as a decreased demand on facilities and utilities would result. A reduction in the installation's Soldier population would allow for the selective demolition of outdated or inefficient facilities, or the re-purposing of existing facilities to support tenant unit requirements.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments.

The anticipated population increase of this action would not increase the demands on facilities and utilities to levels greater than the capacities of the existing infrastructure. Overall, only minor impacts are anticipated as a result of the implementation of Alternative 2. Fort Drum's barracks and other troop facilities are able to accommodate the baseline military population on the installation as well as an additional 3,000 Soldier increase. The installation has 130 modular buildings that are available to provide for additional unit administrative and supply requirements.

4.6.7 Socioeconomics

4.6.7.1 Affected Environment

The ROI consists of Fort Drum and the surrounding communities, including Jefferson, Lewis, and St. Lawrence counties.

Population and Demographics. The Fort Drum population is measured in three different ways. The daily working population is 19,011, and consists of full-time Soldiers and Army civilian employees working on post. The population that lives on Fort Drum consists of 10,076 Soldiers and 13,169 dependents, for a total on-post resident population of 23,245. Finally, the portion of the ROI population related to Fort Drum is 22,642 and consists of Soldiers, Army civilian employees, and their dependents living off post.

The ROI county population is approximately 250,000. Compared to 2000, the 2010 population increased in Jefferson and Lewis counties, and stayed the same in St. Lawrence County (Table 4.6-2). The racial and ethnic composition of the ROI is presented in Table 4.6-3.

Table 4.6-2. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Jefferson	115,000	+ 4.0
Lewis	27,000	+ 0.5
St. Lawrence	112,000	0.0

Table 4.6-3. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
New York	58[3]	14	1	18	7	2	0
Jefferson	86	5	0	5	1	2	0
Lewis	97	1	0	1	0	1	0
St. Lawrence	93	2	1	2	1	1	0

Employment and Income. Compared to 2000, the 2009 employment (private nonfarm) increased in Jefferson County, and decreased in Lewis and St. Lawrence counties, and the State of New York (Table 4.6-4). Employment, median home value, and household income, and poverty levels are presented in Table 4.6-4.

[3] The number of Caucasian people include those who also report themselves as Hispanic is 71 percent.

Table 4.6-4. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
New York	7,332,392	- 0.3	300,600	54,554	14.20
Jefferson	29,392	+ 11.40	108,900	42,926	16.50
Lewis	4,590	- 4.2	95,400	43,741	16.20
St. Lawrence	27,527	- 2.5	76,800	41,627	17.80

Housing. Fort Drum's RCI has developed and renovated approximately 3,900 homes to support housing needs for Families and Unaccompanied Single Soldiers (U.S. Army, 2011a). Construction on an additional 166 additional new homes has recently begun.

Off-post development has included additional housing. Well over 1,000 units are in construction or will break ground in the spring 2012. These projects Creekwood Apartments (96 units), Beaver Meadows Apartments (286 units), Eagle Ridge (39 additional units), Jefferson Apartments (402 units) and Morgan Townhouses (394 units). Together these projects, supported with local and New York State financial assistance, will eliminate the current housing deficit and more.

Schools. Children of military personnel attend public and private schools throughout the ROI communities. Installation housing falls within two area school districts, Carthage Central and Indian River Central. Of the children that reside on the installation, approximately 80 percent attend public schools (32.39 percent attend Carthage Central and 48.67 percent attend Indian River Central).

Public Health and Safety Emergency Services. The Fort Drum Directorate of Emergency Services includes law enforcement, fire and emergency services, force protection/anti-terrorism, fire prevention and protection, emergency dispatch, physical security, and crime prevention. Ultimately, the Fort Drum Directorate of Emergency Services provides for the protection of all critical assets and personnel and ensuring a safe environment for all who work or live on Fort Drum.

Medical. Fort Drum's on-post medical services are administered by MEDDAC at several facilities around the cantonment area. These facilities provide healthcare services for military personnel, military dependents, and to military retirees and their dependents. Services include: Guthrie Army Heath Clinic audiology/speech pathology, dermatology, dietetics, emergency services, family medicine, internal medicine, OB/GYN, occupational therapy, ophthalmology, optometry, orthopedics, pediatrics, physical therapy, psychiatry, surgery, podiatry, psychology, social work, and substance abuse, and dental services. The installation Warrior In Transition Unit provides command and control, administrative support and services, quality prime care and case management services for qualifying Soldiers. They synchronize clinical care, disposition and transition, and promote Soldier readiness to return to the Army or transition to civilian life.

Family Support Services. Fort Drum's ACS manages programs such as Mobilization and Deployment and the Family Readiness Center to assist in educating and preparing Soldiers and Families for the rigors of deployments and extensions. Army Family Team Building educates on the Army way of life and personal development. The Outreach Services acts as a liaison between Families and Fort Drum Command, as well as coordinating and facilitating Army Family Action Plan forums and conferences. The Family Advocacy, Employment Readiness, and Financial Readiness programs deal with personal life issues, working towards the

enhancement and betterment of Army Families. ACS also provides Relocation Readiness for those transitioning both in and out of Fort Drum and houses the Army Volunteer Corps.

Recreation Facilities. The FMWR is responsible for a variety of quality of life concerns for Soldiers and their Families. FMWR is mostly responsible for recreational activities on the installation exclusive of hunting, fishing, trapping, and wildlife viewing, which is managed by the DPW Environmental Division Natural Resources. FMWR's Adventure Training Program promotes periodic hunting and fishing trips to recreational areas off of the installation; the Outdoor Adventure Program directs and/or promotes other recreational activities on and off the installation and maintains shooting ranges; and Parks & Recreation manages Remington Park which offers beach swimming and boating, pavilions, lodges, tent, cabin, and RV sites, trails and outdoor equipment rental.

4.6.7.2 Environmental Consequences

No Action Alternative

There would be no change or minor impacts anticipated under the No Action Alternative. Fort Drum would be anticipated to continue providing a positive economic impact to the surrounding community. No additional impacts to housing, public and social services, public schools, public safety, or recreational activities are anticipated.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of up to 8,000 military employees (Soldiers and Army civilian employees), each with an average annual income of $41,830. In addition, this alternative would affect an estimated 4,464 spouses and 7,680 dependent children for a total estimated potential impact to 12,144 dependents. The total population of military employees and their dependents directly affected by Alternative 1 would be projected to be 20,144 military employees and their dependents.

Based on the EIFS analysis, there would be significant impacts for sales volume, income, employment, and population. The range of values that would represent a significant economic impact in accordance with the EIFS model are presented in Table 4.6-5. Table 4.6-6 presents the estimated economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.6-5. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	15.54	13.09	5.29	3.18
Economic Contraction Significance Value	- 5.73	- 4.00	- 3.23	- 0.88
Forecast Value	- 7.73	- 7.10	- 12.56	- 8.06

Table 4.6-6. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- $384,551,600	- $375,977,100	- 8,900 (Direct) - 1,215 (Indirect) - 10,115 (Total)	- 20,144
Percent	- 7.73 (Annual Sales)	- 7.10	- 12.56	- 8.06

The total annual loss in volume of direct and secondary sales in the ROI represents an estimated -7.73 percent change in total sales volume from the current sales volume of $4.97 billion within the ROI. It is estimated that state tax revenues would decrease by approximately $15.36 million as a result of the loss in revenue from sales reductions. Some counties within the ROI supplement the state sales tax of 4 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by an estimated 7.10 percent. While 8,000 direct Soldier and Army civilian positions would be lost within the ROI, EIFS estimates another 900 direct contract service jobs would be lost, and an additional 1,215 job losses would occur from a reduction in demand for goods and services in the ROI as a result of the indirect impacts of force reduction. The total estimated reduction in demand for goods and services within the ROI would to lead to a loss of 10,115 non-farm jobs, or a -12.56 percent change in regional non-farm employment. The total number of employed non-farm positions in the ROI is estimated to be approximately 80,520. A significant population reduction of 8.06 percent within the ROI is anticipated as a result of this alternative. Of the approximately 250,000 people (including those residing on Fort Drum) that live within the ROI, 20,144 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes Army civilian employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.6-7 shows the total projected economic impacts, based on the RECONS model, that would be estimated to occur as a result of the implementation of Alternative 1.

Table 4.6-7. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- $365,808,847 (Local) - $602,940,634 (State)	- $406,640,553	- 9,037 (Direct) - 1,152 (Indirect) -10,189 (Total)
Percent	- 7.35 (Total Regional)	- 7.63	-12.65

The total annual loss in sales volume from direct and secondary sales reductions in the region represents an estimated -7.35 percent change in total regional sales volume according to the

RECONS model, an impact that is approximately 0.38 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately $24.12 million as a result of the loss in revenue from sales reductions, which is $8.76 million more in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by 7.63 percent, slightly more than the 7.10 percent reduction projected by EIFS. While 8,000 direct military and government civilian positions would be lost within the ROI, RECONS estimates another 1,037 direct contract and service jobs would be lost, and an additional 1,152 job losses would occur from of indirect reduction in demand for goods and services in the ROI as a result of force reduction. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 10,189 jobs, or a -12.65 percent change in regional employment, which is 0.09 percentage points greater than the -12.56 percentage reduction of employment projected under the EIFS model.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 1 would lead to a net reduction of economic activity within the ROI of roughly the same magnitude.

Housing. Alternative 1 would decrease the demand for off-post rentals and purchases of housing. This would tend to depress rental rates and lower home values.

Schools. Fort Drum anticipates a significant impact on ROI schools. As of October 2011, 7,970 military connected children attended schools in the ROI. Approximately 61 percent of school aged children reside on the installation and attend one of the two public school districts associated with the installation. Of these two school districts, military connected children account for 48.67 and 32.39 percent of the student body respectively. The loss of school aged children to districts will directly affect Federal Impact Aid received in lieu of property taxes for children that live in on-post housing. This revenue affects a multitude of components in a school district including school maintenance, teacher hiring, transportation, supplies, and food service.

Public Health and Safety. Fort Drum anticipates less than significant impacts to public health and safety as a result of the implementation of Alternative 1, the population decrease at Fort Drum would likely have a minor effect in reducing the demand for law enforcement services, fire and emergency services, and medical care services on and off post as a result of Alternative 1.

Family Support Services. Fort Drum anticipates less than significant impacts to public health and safety as a result of the implementation of Alternative 1. The population decrease at Fort Drum would likely have a minor effect in reducing the demand for law enforcement services, fire and emergency services, and medical care services on and off post.

Recreation Facilities. Recreational use of facilities on post would decline under this alternative.

Environmental Justice: This alternative would not have any disproportionate impacts on minority or low income populations. Minority populations in the ROI are proportionally much smaller than New York State as a whole.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Economic Impacts. Alternative 2 would result in the gain of up to 3,000 Soldiers, each with an average annual income of $41,830. In addition, this alternative would affect an estimated 1,674 spouses and 2,880 dependent children for a total estimated potential gain of 4,554 dependents

within the ROI. The total population of military employees and their dependents directly affected by Alternative 2 would be 7,554 military employees and their dependents.

Based on the EIFS analysis, there would be no significant socioeconomic impacts in the ROI for this alternative. The range of values that would represent a significant economic impact in accordance with the EIFS model are presented in Table 4.6-8. Table 4.6-9 presents the estimated economic impacts to the region for Alternative 2 as assessed by the Army's EIFS model.

Table 4.6-8. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 2

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	15.54	13.09	5.29	3.18
Economic Contraction Significance Value	- 5.73	- 4	- 3.23	- 0.88
Forecast Value	2.9	2.64	4.71	3.02

Table 4.6-9. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	$144,206,800	$140,991,400	3,338 (Direct) 456 (Indirect) 3,794 (Total)	7,554
Percentage	2.9 (Annual Sales)	2.64	4.71	3.02

The total annual gain in sales volume from direct and secondary sales increases in the ROI would represent an estimated 2.9 percent change in total sales volume from the current sales volume of $4.97 billion within the ROI. It is estimated that state tax revenues would increase by approximately $5.76 million as a result of the gain in revenue from sales increases. Some counties within the ROI supplement the state sales tax of 4 percent by varying percentages, and these additional local tax revenues would be gained at the county and local level. Regional income would increase by 2.64 percent. While 3,000 Soldiers would be gained within the ROI as a direct result of implementing Alternative 2, EIFS estimates another 338 direct contract service jobs would be gained, and an additional 456 new jobs would be created from an increase in demand for goods and services in the ROI as a result of the indirect impacts of force increases. The total estimated increase in demand for goods and services within the ROI would lead to a gain of 3,794 jobs, or a 4.71 percent change in regional employment. The total number of non-farm employed positions in the ROI is estimated to be approximately 80,520. A population increase of 3.02 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 250,000 people (including those residing on Fort Drum) that live within the ROI, 7,554 military employees and their dependents would begin to reside in the area following the implementation of Alternative 2.

Table 4.6-10 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 2.

Table 4.6-10. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment
Total	$137,178,317 (Local) $226,102,738 (State)	$152,490,207	3,389 (Direct) 432 (Indirect) 3,821 (Total)
Percent	2.76 (Total Regional)	2.86	4.75

The total annual gain in sales volume from direct and secondary sales increases in the region represents a 2.76 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 0.14 percentage points less than estimated by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would increase by approximately $9.04 million as a result of the gain in revenue from sales reductions, which would be $3.28 million more than the additional state sales tax revenue projected by the EIFS model. Regional income is projected by RECONS to increase by 2.86 percent, slightly more than the 2.64 increase projected by EIFS. While 3,000 Soldiers would be gained within the ROI as a direct result of the implementation of Alternative 2, RECONS estimates another 389 direct contract and service jobs would be gained, and an additional 432 jobs as a result of indirect increases in demand for goods and services in the ROI as a result of force increase. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 3,821 jobs, or 4.75 percent change in regional employment, which is 0.04 percentage points greater than projected under the EIFS model.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 2 would lead to a net increase of economic activity within the ROI of roughly the same magnitude.

Population and Demographics. Fort Drum anticipates a less than significant economic impact as a result of Alternative 2. It is expected that the stationing action would increase regional employment to some degree, thereby supporting the low income or minority populations. Once Fort Drum units fall back to their MTOE authorized strength as a result of the Army force reductions, this new stationing action would simply restore the authorized Soldier population.

Schools. Adverse impacts to the schools are not expected from an increase of the military population in that the installation has been running significantly over strength for the past couple years, specifically 116 percent or an additional 2,763 Soldiers over and above the formations' authorized strength (as of 22 November 2011). Once Fort Drum units fall back to their MTOE authorized strength as a result of the Army force reductions, this new stationing action would simply restore the authorized Soldier population.

Housing. Housing impacts from the 2004 transformation and recent surge numbers have been mitigated within the community through new rental housing construction. Off post there are 96 housing units under construction and 1,059 housing units planned to start in 2012. Additional new housing developments are in planning stages for the towns of Watertown, Pamelia, Champion, and Wilna and the Village of Carthage. This alternative could lead to a slight increase in demand for housing, and decreased housing availability in the region. This would lead to a slight increase in median home values.

Public Health and Safety. There would be no change in the level of support Fort Drum provides to Soldiers, Families and the ROI communities.

Family Support Services. There would be no change in the level of support Fort Drum provides to Soldiers, Families and the ROI communities.

Recreation Facilities. There would be no change in the level of support Fort Drum provides Soldiers, Families and the ROI communities.

***Environmental Justice*.** This alternative would not have any disproportionate impacts on minority or low income populations. Minority populations in the ROI are proportionally much smaller than New York State as a whole.

4.6.8 Energy Demand and Generation

4.6.8.1 Affected Environment

Fort Drum's energy requirements for electrical and natural gas service are provided by the local utility company, National Grid. The internal distribution systems are government owned and operated.

Electricity. The utility company supplies power to Fort Drum at a number of connection points. There are two main substations in the cantonment area, each with a nominal capacity of 15 megavolt amperes. These substations are configured to receive hardware for additional capacity, if necessary. The average monthly demand in FY 2008 was 19.3 MW. The existing electrical infrastructure could support up to a 45 percent increase in demand (U.S. Army, 2011a).

Natural Gas. Fort Drum purchases natural gas with transport delivery through the National Grid distribution system. There are three active connections to the system: two 8-inch pipelines from the high pressure system and a 6-inch pipeline from a medium pressure system. On-post distribution pressure could be raised from 15 per square inch up to 30 per square inch to increase capacity if required. In FY 2008, Fort Drum used an average monthly total of 835,579 therms. The existing natural gas distribution system could easily support a 50 percent increase in demand, even with the anticipated conversion of existing buildings from other heat sources (propane, fuel oil) (U.S. Army, 2011a).

Other Heating Fuels. When natural gas service is not connected or available local propane and fuel oil systems are used for heating. In FY 2008, the post used an average monthly total of approximately 27,761gallons of propane and approximately 7,800 gallons of fuel oil. These fuels are contained in building-specific tanks. There is no major on-post infrastructure associated with these energy sources, and their use is anticipated to decrease with the implementation of further conversion to natural gas (U.S. Army, 2011a).

In accordance with E.O. 13423, Fort Drum has the goal of annually reducing energy intensity on the installation by three percent per square foot through FY 2015. Fort Drum has consistently met these energy use intensity goals and is currently exceeding the 2015 target, 3 years ahead of schedule.

4.6.8.2 Environmental Consequences

No Action Alternative

The No Action Alternative would not have more than a minor impact to the installation's energy resources.

Alternative 1: Force Reduction (Up to 8,000 Soldiers and Army Civilians)

As a result of the implementation of Alternative 1, the installation would anticipate a reduction in energy consumption comparing the loss of up to 8,000 Soldiers with the installation's full-time military and civilian populations. A reduction of 8,000 Soldiers and Army civilians represents approximately one third of the installations military and civilian population living on post, and such a reduction could lead to up to a 20 percent decrease in energy demand. Fort Drum's pursuit of energy efficiency and conservation measures would also contribute to reduced energy usage and energy demand reductions. Overall, Alternative 1 would result in minor beneficial impacts.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

The growth scenario of Alternative 2 represents a small fraction of the overall mission activity at Fort Drum. This fact, combined with a large excess of energy resources available, means that this unit growth scenario is likely to have a less than significant impact on energy demands and associated systems. There are more than adequate capacities at Fort Drum to accommodate this level of growth.

4.6.9 Land Use Conflicts and Compatibility

4.6.9.1 Affected Environment

Military functions can be divided into a number of land use categories displaying, with a few exceptions, the basic attributes of civilian land use types. Land uses within the cantonment area and the Wheeler-Sack Army Airfield at Fort Drum include: Headquarters and Administration, Troop Housing, Industrial, Community Facilities, Medical Facilities, Operations, Family Housing, Training Areas, and Buffer and Recreation. Locations and descriptions for each of the land uses at Fort Drum are presented in the PEA prepared in 2000 (U.S. Army, 2000).

Military Operations Land Use. The military operations land use areas at Fort Drum includes facilities that support mission operations. There are three areas of operations land use at Fort Drum, the largest of which is the Wheeler-Sack Army Airfield. There is only one Operation Area within the cantonment area; this area is located along Great Bend Road, just south of 45th Infantry Division Drive. The operations land use areas compromise less than 2,500 acres, or less than three percent of Fort Drum's land area (U.S. Army, 2011a).

Training Areas Land Use. Training areas primarily consist of Local Training Areas that extend outward from Iraqi Freedom Drive and Enduring Freedom Drive in the North Post portion of the cantonment area. Local Training Areas are outdoor areas used for company-level, individual, and collective training. Training land use in the cantonment area covers approximately 1,628 acres, as well as 77,565 acres of maneuver area (U.S. Army, 2011a).

Buffer Land. Buffer land is used to separate incompatible land uses and mitigate the impacts on more sensitive land uses (e.g., Family housing). Buffer land at Fort Drum runs north along Mount Belvedere Boulevard, from the Belvedere Gate to Enduring Freedom Drive, then west along Iraqi Freedom Drive to the Iraqi Freedom Gate. Buffer land use occupies 780 acres within the cantonment area (U.S. Army, 2011a).

4.6.9.2 Environmental Consequences

No Action Alternative and Alternative 1

The No Action Alternative and Alternative 1 would have a negligible impact to land use at or around the installation. Land use would not change. Additional units would use the existing

lands and facilities. Stationing would not cause changes to existing or regional land use. Force strength is at 116 percent (December 2011) without stress to land use.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Supporting the Fort Drum military mission is the installation Natural Resource Program's first priority. The INRMP provides for continuous and effective resource management and ensures that responsible natural resource stewardship is met. As a result of the implementation of Alternative 2, associated training requirements would not cause impacts to natural resources.

There is a very low potential for adverse environmental impacts on installation land use anticipated, due to an additional 3,000 Soldiers and their Family members assigned to the installation. The installation has vacant space available in existing buildings, and has land available to build needed facilities, or a combination thereof to meet the unit's mission requirements. Additionally, lands, and existing facilities, are located such that surrounding facilities are compatible with Alternative 2.

4.6.10 Traffic and Transportation

4.6.10.1 Affected Environment

The ROI for traffic and transportation aspects include Fort Drum, and several neighboring counties, to include Jefferson, Lewis, and St. Lawrence counties, and the communities therein, to include the City of Watertown. Major road routes in the region include I-81 and U.S. Route11; I-81 is a north-south interstate highway located approximately 5 miles west of the installation. U.S. Route 11 is a north-south major arterial that passes through the City of Watertown. New York State routes 3, 283, and 342 lead to the installation cantonment area gates.

4.6.10.2 Environmental Consequences

No Action Alternative and Alternatives 1 and 2

All three alternatives would have a very low potential for adverse environmental impacts on traffic and transportation. Impacts to traffic from all through alternatives would be minor. Fort Drum does not foresee the increase of 3,000 Soldiers to have an adverse effect to the traffic LOS. There is a new highway connector (I-781) under construction that will connect I-81 with U.S. Route 11 and lead directly onto the installation at the Iraqi Freedom Drive gate. I-781 is programmed for summer 2012 completion. In addition, the installation has completed numerous on-post improvements by installing multiple traffic signals at key intersections. Impacts during construction would be short term. The I-781 project was assessed with an EIS that resulted in a ROD dated March 2009 (https://www.dot.ny.gov/regional-offices/region7/projects/fort-drum-connector).

4.6.11 Cumulative Effects

Ongoing and potential cumulative effects actions have been identified on and off post that may present further effects to the installation and surrounding community when the effects of these actions are considered cumulatively. Fort Drum acknowledges that other construction and modification projects (in addition to what is listed below) may be likely in the reasonably foreseeable future; however, they may not contribute considerably to cumulative effects when combined with the level of growth identified in this PEA.

Past and Recently Completed Projects Off Post

- Family housing revitalization and new construction of multiple rental complexes;

- U.S. Route 11 roadwork (includes additional turn lanes at U.S. Route 11 and U.S. Route 342 intersection, widening of U.S. Route 11 to accommodate wider shoulders and center turn lanes to access new businesses that have sprung up along the U.S. Route 11 between the U.S. Route 11 and U.S. Route 342 intersections and the installation main gate; and
- Major road construction and power line upgrades are being conducted where the main business road in City of Watertown (Arsenal Street) meets I-81 is completed. The on and off ramps have been changed.

Current and Ongoing Activities Off Post

- Continuing market housing development and construction;
- I-81 to Fort Drum Connector Project. This project is to provide an improved connection between I-81 and U.S. Route 11 and will be a direct route to the North Gate Entrance to Fort Drum;
- Construction of a hotel on U.S. Route 11; and
- Off post there are 96 housing units under construction and 1,059 housing units planned to start constructing in the spring of 2012.

Reasonably Foreseeable Future Projects Off Post

- Additional new housing developments in the towns of Watertown, Pamelia, Champion, Wilna, and Village of Carthage.

Future Projects at Fort Drum

- Privatized Army Lodging is proposing to update the Fort Drum Inn facility and construction of a new hotel facility at the installation. Site selection is underway with plans for construction to begin in 2012.

On post, the installation anticipates implementing additional controls to avoid soil erosion in places of high construction to avoid the potential for sedimentation from training and construction to enter local surface waters. Water quality would continue to be monitored and controlled to prevent degradation through established BMPs, until construction ceases. Air quality may continue to experience short-term minor impacts cumulatively, as new stationary sources are added to the installation, and mobile sources may increase and decrease as the installation population fluctuates with unit deployments and redeployments. When considering cumulative impacts to air quality from road construction, development locally, in addition to Army realignment, impacts would be less than significant. Noise from training activities would also be cumulatively less than significant when considering noise from Army activities in addition to construction noise from roadway improvements and private development. Finally, the generation of solid waste from construction and demolition activities would be slightly elevated, but would not present a significant impact.

Overall, under Alternative 1, cumulative adverse socioeconomic impacts would likely be long term and significant in nature. A significant adverse impact would be anticipated as Fort Drum is a leading employer and economic engine for the region. Adverse impacts would result due to the anticipated loss of jobs, decrease in real estate values; decrease in educational, social, and medical services; decrease in tax revenue. Other than Fort Drum, there are limited employment base options upon which the community can rely meaning that the job loss cannot be absorbed by other employment sectors such as the case in more urban areas. In addition, adverse impacts to multiple regional community services and schools would be anticipated because they receive funding, support, time, donations, and tax revenue directly related to the number of military authorizations and their dependents.

Continued socioeconomic impacts are anticipated in the areas surrounding ROI as the result of projected population growth and development. Long-term direct and indirect beneficial cumulative effects are anticipated because of increased sales volume and employment in the local area as a result of the implementation of Alternative 2. The beneficial economic effects (i.e., increased spending, employment, and income) of these actions are anticipated to last for the duration any construction projects. A lasting economic benefit would result from increased expenditure of discretionary income of Soldiers and their Families.

The population growth and construction projects planned through FY 2013 would not disproportionately impact on minorities or low-income populations in the surrounding community.

No construction projects or training exercises would take place near schools, daycares, or other areas with large populations of children. No cumulative adverse effects to the health and safety of children are anticipated as a result of any of the alternatives.

The construction of I-781 Fort Drum Connector project will facilitate enhanced accessibility to the Fort Drum area from the I-81. Fort Drum also anticipates a less than significant cumulative impact to traffic and transportation, on and off post in conjunction with the implementation of Alternative 2; however, with the recent and ongoing road improvements outside the installation boundary Fort Drum anticipates only short-term adverse effects, with long-term impacts being beneficial, once traffic projects off post are completed.

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4.7 FORT GORDON, GEORGIA

4.7.1 Introduction

Fort Gordon encompasses approximately 55,600 acres in east central Georgia (Figure 4.7-1). Approximately 50,000 acres (90 percent) of Fort Gordon is used for training missions (Figure 4.7-1). The installation is subdivided into 49 training areas, two restricted impact areas (small arms and artillery), and two cantonment areas (main and industrial). Impact areas occupy approximately 13,000 acres and on-post maneuver and training areas occupy approximately 37,000 acres. The remaining 5,590 acres are occupied by cantonment areas which include military housing, administrative offices, community facilities, medical facilities, industrial facilities maintenance facilities, supply and storage facilities, lakes and ponds, recreational areas and forested areas. The installation operates 14 live-fire ranges, 1 dud impact area, 1 demolition pit, 1 indoor shoot house, 1 convoy live-fire familiarization course, 2 military operations on urban terrain site and buildings, and 1 nuclear, biological, and chemical chamber. Training primarily consists of advanced individual signal training, unit employment of tactical communications and electronics operations and medical-related training through Gordon's regional medical center. Additionally, artillery, demolition, aerial gunnery, load master drop zone, and airborne troop training are conducted on Fort Gordon.

Fort Gordon is the largest communications training facility (130 courses and 16,000 troops per year) in the Armed Forces, and is the focal point for the development of tactical communications and information systems (CSRA Regional Development Center, 2005). The installation trains Soldiers with the most sophisticated communications equipment and technology in existence. The Leader College of Information Technology is the U.S. Army's premiere site for all automation training and home to the Regimental Non-Commissioned Officer Academy. Fort Gordon is also home to: U.S. Army Garrison, U.S. Army Signal Center of Excellence, 7th Signal Command (Theater), National Security Agency/Central Security Service-Georgia, two deployable brigades (the 35th Signal Brigade and the 513th Military Intelligence Brigade), the Dwight D. Eisenhower Medical Center, Southeast Region Veterinary Command, Southeast Regional Dental Command, the U.S. Army's only Dental Lab, U.S. Navy Information Operations Command, 480th ISR Group (U.S. Air Force), 706th Military Intel Group, U.S. Marine Corps Detachment-Fort Gordon, 139th Intelligence Squadron (Air Guard), 359th Signal Brigade (Army Reserve), 324th Signal Battalion (Army Reserve), U.S. Army Regional Training Site-Medical (Army Reserve), 201st Regional Support Group (Army Reserve National Guard), and the Georgia National Guard Youth Challenge Academy. Additionally, numerous Army reserve and Georgia and South Carolina National Guard units utilize Fort Gordon's weapons ranges and training areas.

4.7.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Gordon does not anticipate any significant adverse impacts as a result of the implementation of Alternative 1 (Force reduction of up to 4,317 Soldiers and Army Civilians); however, significant economic impacts could occur if the full measure of force reduction of up to 4,300 Soldiers were implemented. Table 4.7-1 summarizes the anticipated impacts to VECs for each alternative.

Figure 4.7-1. Fort Gordon

Table 4.7-1. Fort Gordon Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 4,300
Air Quality	Negligible	Negligible
Airspace	Negligible	Negligible
Cultural Resources	Negligible	Negligible
Noise	Negligible	Negligible
Soil Erosion	Negligible	Negligible
Biological Resources	Negligible	Negligible
Wetlands	Negligible	Negligible
Water Resources	Negligible	Negligible
Facilities	Less than Significant	Less than Significant
Socioeconomics	Negligible	Significant
Energy Demand and Generation	Negligible	Negligible
Land Use Conflict and Compatibility	Significant but Mitigable	Significant but Mitigable
Hazardous Materials and Hazardous Waste	Negligible	Negligible
Traffic and Transportation	Negligible	Beneficial

4.7.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section below, no more than a beneficial or negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- ***Air Quality.*** The Fort Gordon cantonment area is in the Augusta Georgia - Aiken South Carolina Interstate Air Quality Control Region (AQCR) 053. The EPA Region 4 has designated the entire AQCR 053 as an attainment area for all criteria pollutants (EPA 2009, 2010a, 2010b). An applicability analysis and formal conformity demonstration under the General Conformity Rule (40 CFR 93.153) for the Proposed Action, therefore, is not required. Fort Gordon holds a Title V operating permit (AIRS Number: 24500021), which was reissued on March 9, 2010 The permit requirements include annual periodic inventory for all stationary sources of air emissions and covers monitoring, record-keeping, and reporting requirements. Fort Gordon's 2009 installation-wide air emissions are tabulated as follows: 41 tpy of VOCs; 15.7 tpy of NO_x; 13.6 tpy of CO; 1.1 tpy; SO_2; and 1.2 tpy of PM_{10} (Fort Gordon, 2010).

  No effects (negligible) on air quality would be anticipated under the No Action Alternative. No construction or changes in military operations at Fort Gordon would occur. There would be negligible change to existing air emissions or air permitting requirements as a result of the implementation of Alternative 1. The installation would

still maintain a Title V operating permit and associated reporting requirements. There would be a minor decrease in the amount of emissions generated from a reduction in mobile and stationary sources.

- ***Airspace.*** Fort Gordon has restricted airspace over its artillery firing points and artillery impact area. The FAA designator for the airspace is R3004A and R3004B and go up to 8,000 feet AGL and 20,000 feet AGL, respectively. With no direct airfield support to Fort Gordon, the Range Manager acts as the Air Traffic and Airspace Officer for Fort Gordon. The restricted airspace is reserved in advance through the Federal Air Administration's Processing Office out of Saint Petersburg, Florida. There is currently no controlled airspace of any kind over any of the small arms ranges in the small arms impact area. A live radar to provide visibility of the area along with unit observation, allows management of a Small Arms Range Safety Areas over each small arm range to protect nonparticipating aircraft in the locale.

  There would be negligible impacts or required change to existing SUA under the No Action Alternative. No new airspace would need to be designated and current airspace is not over utilized. There would be negligible change to existing SUA as a result of the implementation of Alternative 1. There would be no projected change in frequency or intensity of activities at Fort Gordon that require the use of airspace.

- ***Cultural Resources.*** The Fort Gordon ICRMP (Fort Gordon, 2011) includes detailed information on applicable cultural resources regulatory frameworks, regional prehistoric and historic background, the history of Fort Gordon, cultural resources investigations and recorded properties, and installation-specific standard operating procedures (SOPs) for managing and protecting important sites. That and other ICRMP information are incorporated here by reference and, therefore, are not repeated. In addition to the ICRMP, Fort Gordon has a Programmatic Agreement among the U.S. Army and the Georgia SHPO (Fort Gordon, 2006) to facilitate daily management of its cultural resources.

  Archaeological Sites. Fort Gordon has completed archaeological surveys on 47,619 acres, or 95 percent of the total land area of the installation. Areas that have not been surveyed include portions of the heavily disturbed cantonment area, impact areas that contain or are likely to contain UXO, and lake bottoms. As of 2009, 1,150 archaeological sites had been identified on Fort Gordon. Of those, 995 are not eligible for listing on the NRHP, 114 are potentially eligible, and 41 are eligible for listing on the NRHP. Phase II testing to evaluate the NRHP eligibility of archaeological sites has been completed at 29 sites. A majority of the prehistoric sites are adjacent to water features such as drainages. Many of the historic sites are relict mill sites and homesteads that were razed after the Army purchased the land. There are 43 known historic cemeteries that date before Fort Gordon's establishment. Fort Gordon still uses and maintains many of the cemeteries. Two prisoner-of-war cemeteries are on Fort Gordon near Gate 2. German and Italian prisoners of war who died while in captivity from 1944 through the end of WWII were buried at those cemeteries.

  Historic Architecture. Fort Gordon has recently completed an installation-wide architectural survey. Through the survey, no buildings or structures were determined to be eligible or potentially eligible for listing on the NRHP. However, on the basis of the recommendation of the Georgia SHPO, Building 33500, Woodworth Library, is considered eligible for the NRHP under Criteria C for the architectural significance of its New Formalism style and Criterion Consideration G for a building less than 50 years old because few buildings of this style remain intact in Georgia. Forty three structures (the

Signal School Campus) have been recommended for re-evaluation upon reaching 50 years of age and will likely be determined eligible as an historic district.

Under the No Action Alternative, there would be negligible impacts to any building, structures or sites eligible or potentially eligible for the NRHP. Current construction and ground disturbance activities have been previously evaluated and authorized. There would be negligible impact on cultural resources as a result of the implementation of Alternative 1. Some facilities may be demolished if they were determined to be excess facilities. Impacts to historic structures or structures potentially eligible for the NRHP are not anticipated. Any associated actions that may impact the Signal School Center of Excellence campus would need additional evaluation to avoid negative impacts on historic district eligibility. Such actions would undergo Section 106 consultation if determined to be appropriate for any such proposal if it were required in the future.

- ***Noise.*** The primary source of noise at Fort Gordon is military training activities. Other sources of noise include operation of civilian and military vehicles, lawn and landscape equipment, construction activities and vehicle maintenance operations. The U.S. Army recognizes three NZs (see Table 4.0-1) to aid in land use planning on and near installations (U.S. Army, 2007).

  There would be negligible change on the ambient noise environment and to existing noise generating activities as a result of both alternatives. As a result of the implementation of Alternative 1, the installation would still generate noise from construction and military training activates at project and range training sites. Noise from these areas would remain contained within the installation boundary. Noise generating activities carried out on post would continue to be similar to those that would occur as a result of both alternatives, though some activities, such as Soldier weapons qualification, would occur less frequently.

  There would be a minor decrease in the amount of training related noise generated as a result of the implementation of Alternative 1.

- ***Soil Erosion.*** Fort Gordon is located along the fall line between the Lower Piedmont and Upper Coastal Plains physiographic provinces. In this zone of transition, the topography ranges from the gentle undulating sand hills of the south and middle sections, to areas of steep slopes and near bluffs adjacent to some of the streams, which are characteristically small and bordered by heavy hardwood swamp areas. The elevation of Fort Gordon ranges between 221 feet and 561 feet above MSL, and the majority of the land area (35,852 acres) is between 378 feet and 489 feet above MSL.

  The majority of the installation is overlain by well-drained medium to fine sands in upland areas. There are scattered areas near the central and southwest portion of the installation that consist of moderately well drained to well drained fine sands over sandy silts or sandy clays. In areas bordering drainage ways, the Quaternary age materials consist mainly of poor to moderately well drained fine silty sands over sandy silts or sandy clays. Twenty-six soil classes have been identified on the installation. The predominant soils types on the installation are the Troup and Lakeland series. The next overall predominant soil types on the installation are the Orangeburg, Lucy, and Dothan series. Other major soil types include the Vaucluse and Ailey soil series. Additional information pertaining to soils may be found in the INRMP (Fort Gordon, 2008).

  There would be a negligible change to existing geology, topography, or soils as a result of either alternative. There would be a minor beneficial impact and reduction to the amount of soil displacement and erosion if levels as military field training decreases in frequency of training events. There would be fewer areas that experience denuded

vegetation for bivouac areas and other training and, therefore, less soil exposed to wind and water based erosion.

- ***Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species).*** Target species refers to federally endangered or threatened species, Species of Concern, state-listed species, and state tracked species. A total of 17 animals (5 birds, 2 mammals, 6 reptiles and amphibians, and 4 fishes) and 11 plant species listed as either threatened, endangered, or Species of Concern by the USFWS or the State of Georgia are known to occur on Fort Gordon. Table 4.7-2 list these species, their status and describes each species' optimum habitat requirement for survival.

  Federally-listed species that occur on Fort Gordon include the RCW and the wood stork (endangered). The RCW is currently the only federally-listed species known to reside on Fort Gordon. The wood stork is a transient species that has been observed foraging and roosting on the installation, but is not known to nest on the installation. The gopher tortoise is a federal candidate species and is managed by the Army as a Species at Risk under a candidate conservation agreement with numerous federal and state agencies. Additional detailed information concerning threatened and endangered species is provided in the revised INRMP (Fort Gordon, 2008).

Table 4.7-2. Threatened or Endangered Species

Common Name	Scientific Name	Status		Description of Habitat
		Federal	State	
Birds				
Bachman's sparrow	*Aimophila aestivali*	SOC	R	Abandoned fields with scattered shrubs, pines, or oaks.
Southeastern American kestrel	*Falco sparverius paulus*	SOC	R	Breed in open or partly open habitats with scattered trees and in cultivated or urban areas.
Migrant loggerhead shrike	*Lanius ludovicianus migrans*	SOC	Tr	Open wood, field edges.
Wood stork	*Mycteria americana*	E	E	Primarily feed in fresh and brackish wetlands and nest in cypress or other wooded swamps.
Red-cockaded woodpecker	*Picoides borealis*	E	E	Nest in mature pine with low understory vegetation; forage in pine and pine hardwood stands.
Mammals				
Southeastern bat	*Myotis austrororiparius*	SOC	Tr	Caves used for hibernating, maternity colonies, and summer roost.
Rafinesque's big eared bat	*Corynorhinus rafinesquii*	SOC	R	Buildings in forested regions.
Reptiles and Amphibians				
Gopher tortoise	*Gopherus polyphemus*	SOC	T	Well-drained, sandy soils in forest and grassy area, associated with pine overstory.
American alligator	*Alligator mississippiensis*	T	NL	Marshes, swamps, rivers, farm ponds, and lakes. Nest in shallow, heavily vegetated secluded areas.

Common Name	Scientific Name	Status		Description of Habitat
		Federal	State	
Birds				
Southern hognose snake	*Heterodon simus*	SOC	T	Open, sandy woods, fields, and floodplains.
Florida pine snake	*Pituophis melanoleucus mugitus*	SOC	Tr	Arid pinelands, sandy areas, and dry mountain ridges.
Dwarf waterdog	*Necturus punctatus*	NL	Tr	Sluggish streams with substrate of leaf litter or woody debris.
Eastern tiger salamander	*Ambystoma t. tigrinum*	NL	Tr	Isolated wetlands, pine dominated uplands, and open fields.
Fish				
Bluebarred pygmy sunfish	*Elassoma okatie*	NL	E	Heavily vegetated creeks, sloughs, and roadside ditches.
Savannah darter	*Etheostoma fricksium*	NL	Tr	Shallow creeks with moderate current with sandy or gravel bottoms.
Sawcheek darter	*Etheostoma serriferum*	NL	Tr	Sluggish streams and swamps with sand or mud.
Sandbar shiner	*Notropis scepticus*	R	NL	Large streams to medium-sized rivers.
Plants				
Sandy-woods chaffhead	*Carphphorus bellidifolius*	NL	Tr	Sandy scrub.
Rosemary	*Ceratiola ericoides*	NL	T	Driest, openly vegetated, scrub oak sandhills and river dunes with deep white sands of the Kershaw soil series.
Atlantic white cedar	*Chamaecyparis thyoides*	NL	R	Wet sandy terraces along clear streams and in acidic bogs.
Pink ladyslipper	*Cypripedium acaule*	NL	U	Upland oak-hickory pine forest.
Sandhill gay-feather	*Liatris secunda*	NL	Tr	Fall line sandhills.
Carolina bogmint	*Macbridea carolina*	SOC	R	Bogs, marshes, and alluvial woods.
Indian olive	*Nestronia umbellula*	SOC	R	Dry open upland forest of mixed hardwood and pine.
Sweet pitcher plant	*Sarracenia rubra rubra*	NL	T	Acid soils of open bogs, sandhill seeps, Atlantic white cedar swamps, and wet savannahs.
Carolina pink	*Silene caroliniana*	NL	Tr	Granite outcrops and sandhills near the Ogeechee and Savannah rivers.
Pickering morning glory	*Stylisma pickeringii var. pickeringil*	SOC	T	Coarse white sands on sandhills near the fall line and on a few ancient dunes along the Flint and Ohoopee rivers.
Silky camelia	*Stewartia malacodendron*	NL	R	Steepheads, bayheads, and edge of swamps.

1 Source: Fort Gordon, 2008
2 Key : E = Endangered, NL = Not Listed, R = Rare, SOC = Species of Concern, T = Threatened, Tr = Tracked, U = Unusual.

Negligible impacts on biological resources, threatened or endangered species at Fort Gordon would be anticipated under the No Action Alternative. No additional military training, demolition or construction would occur. The threatened and endangered species recorded on the installation would continue to be managed in accordance with the installation's INRMP and ESMP, terms and conditions identified within Biological Opinion(s) issued by the USFWS and any conservation measures identified in the ESA Section 7 consultation documents. There would be negligible change to existing biological resources, threatened or endangered species as a result of the implementation of Alternative 1. The threatened and endangered species recorded on the installation would continue to be managed in accordance with the installation's INRMP and ESMP, terms and conditions identified within Biological Opinion(s) issued by the USFWS and any conservation measures identified in ESA, Section 7 consultation documents. No change in impacts or management is anticipated to occur as a result of the implementation of this alternative. Minor beneficial impacts of reduced wildlife disturbance and vegetative disturbance are anticipated as a result of this alternative

- ***Wetlands.*** Approximately 4,395 acres of wetlands occur on Fort Gordon. These wetlands consist of both alluvial and nonalluvial wetlands. Alluvial wetlands are associated with stream channels and depend on the flooding regime of the stream system. With the exception of Brier Creek, the floodplain of most alluvial wetlands on Fort Gordon is inconspicuous due to rolling topography. These streams fit the description of "small stream swamps" where separate fluvial features and associated vegetation are too small or poorly developed to distinguish (Fort Gordon, 2008).

  Nonalluvial wetlands are associated in areas where groundwater emerges or precipitation is held close to the soil surface. Nonalluvial wetlands on Fort Gordon included seepage areas and isolated wetlands. Seepage areas occur on saturated soils where the water table remains immediately below the soil surface. Plant species associated with these types of wetlands include, but are not limited to sweetbay magnolia (*Magnolia virginiana*) in the midstory and sweetgum (*Liquidambar styraciflua*) and yellow-poplar (*Liriodendron tulipifera*) in the overstory. Isolated wetlands include small isolated ponds with grasses and herbs as dominate vegetation. If present the overstory consists primarily of sweetgum and blackgum (*Nyssa biflora*) (Fort Gordon, 2008).

  Section 404 permits may be required, for construction of new facilities or ranges. Also, under the Georgia MS4 permit issued to Fort Gordon, all new construction must have a silt and erosion plan. In addition Section 303(d) (Impaired Streams) should also be taken into consideration, as there are several impaired stream segments on Fort Gordon and they could easily be impacted by the additional construction and training. Furthermore, there are BMPs and NPDES permits and stream buffer variances for construction.

  Negligible impacts on wetlands would be anticipated under the No Action Alternative. There would be negligible change to wetlands as a result of the implementation of Alternative 1. There may be a minor decrease in the amount of soil displacement and erosion potentially impacting wetlands if levels of construction and military field training are reduced. There would not be any long-term impacts to wetlands projected from the demolition of select facilities.

- ***Water Resources.*** The borders of Fort Gordon encompass five separate watersheds and none of the watersheds are entirely within the installation (GADNR, 2008). Three of the five streams are in non-attainment for criteria pollutants. Section 303(d) of the CWA requires that states develop a list of waters not meeting water quality standards or not

supporting their designated uses (Water Quality Inventory Integrated Report Section 305(b) and 303(d) Reports). The suspected causes of impairment include urban runoff and nonpoint source pollution from an unknown source

Fort Gordon is located in the Coastal Plain hydrogeologic province of Georgia, whose principle groundwater source is the Southeastern Coastal Plain aquifer system. This aquifer is composed of interbedded sand and clay of Cretaceous age and locally includes sand and clay of early Tertiary age. Typical yields in this area range from 29,000 to 72,000 gpd. Studies of groundwater quality indicate the groundwater is quite acidic (Fort Gordon, 2008).

Fort Gordon's potable water distribution system is connected to the Augusta-Richmond County system, and potable water for the cantonment area is supplied through that system. Potable water delivered to the installation is fully treated (USACE, 2010). Water in the outlying areas of the installation is supplied from nine drilled wells.

The stormwater drainage system at Fort Gordon is a series of pipes and paved and channeled natural drainage ditches. New low-impact development regulations require Fort Gordon to design projects to minimize the effects on stormwater drainage systems. Per regulatory Stormwater Phase II requirements for MS4, the post construction site runoff is required to be the same as pre-construction runoff coefficients, to not impact the existing watershed conditions.

There would be negligible change to water resources as a result of the implementation of either alternative. There would be beneficial impacts with regards to a decrease in the amount of water consumed and the reduction in wastewater generated by a reduced number of military personnel and their dependents.

- ***Energy Demand and Generation.*** Fort Gordon's energy consumption profile is very diverse, consisting of many different sources of energy, electric power and natural gas, both delivered by commercial utilities, as well as No. 2 fuel oil, and propane.

  Electricity. In February 2007, Fort Gordon's electric system was privatized. The Georgia Power Company owns and operates it. The system receives 115 kV primary input at two jointly owned and operated substations (main and hospital), which provide electrical power to the entire installation.

  Natural Gas. The Atlanta Gas Light Company owns, operates, and maintains the natural gas system on Fort Gordon, and it replaced most piping and components in 2003 (USACE, 2010). Natural gas is supplied to heating and cooling plants, housing, barracks, medical facilities, academic facilities, and other facilities.

  The abundance of energy sources, and adequate supplies from each source, provide Fort Gordon with ample excess energy capacity, allowing them to accommodate a variety of future mission expansion scenarios.

  Negligible impacts on energy demand would be anticipated under the No Action Alternative. No changes to utility systems would be necessary under the No Action Alternative. There would be a minor beneficial change to energy demand as a result of the implementation of Alternative 1. There would be a decrease in the amount of energy consumed with reduced levels of military personnel and dependents. In addition, the installation would continue to look for opportunities to conserve energy and consume less energy while becoming more efficient in its usage of its existing energy supply

- ***Hazardous Materials and Hazardous Waste.*** The affected environment for the Proposed Action includes the use, storage, transport, and disposal of hazardous materials and wastes at Fort Gordon. This includes hazardous materials and wastes from USTs and ASTs; pesticides; LBP; asbestos; PCBs; radon; and UXO. Each

installation operates under a Hazardous Waste Management Program that manages hazardous waste to promote the protection of public health and the environment. Army policy is to substitute nontoxic and non-hazardous materials for toxic and hazardous ones; ensure compliance with local, state, and federal hazardous waste requirements; and ensure the use of waste management practices that comply with all applicable requirements pertaining to generation, treatment, storage, disposal, and transportation of hazardous wastes. The program reduces the need for corrective action through controlled management of solid and hazardous waste.

Negligible impacts on hazardous materials and waste generation or management would be anticipated from either alternative. Waste collection, storage, and disposal processes would remain unchanged, and current waste management programs would continue. There may be a minor decrease in the amount of hazardous materials and hazardous waste used and disposed of as a result of the implementation of Alternative 1 with reduced levels of military personnel.

- ***Traffic and Transportation.*** Fort Gordon is approximately 142 miles east of Atlanta, 80 miles west of Columbia, South Carolina, and 122 miles northwest of Savannah, Georgia. Two U.S. highways, 1 and 78, parallel the north and south installation boundaries. I-520 serves as a connection road between U.S. Highway 1 and I-20 at the north portion of the installation traveling east west from Augusta to Atlanta. Four public entrances serve the installation. The McKenna Gate (Gate 1) at the intersection of Jimmy Dyess Parkway and U.S. Highway 78 (Gordon Highway) is the main public entrance to the post where the average vehicle trips are 9,920 per day. At the southern portion of the installation is Gate 5, where the average vehicle trips per day are 18,790 (GDOT, 2008).

  The basic road network on Fort Gordon is adequate for installation traffic, except at major intersections during peak traffic flow. Peak traffic flow generally occurs during morning and evening rush hours, and traffic congestion would extend beyond the installation boundaries onto the off-post connecting highways. U.S. 78 (Gordon Highway) and Old U.S. Highway 1 (Dean's Bridge Road) run along the north and south boundaries of Fort Gordon, respectively.

  Negligible impacts on traffic or transportation would be anticipated as a result of either alternative. Traffic would remain the same with numerous intersections on the installation currently at LOS during peak morning and evening hours. There would be beneficial overall impacts to traffic and transportation networks as a result of the implementation of Alternative 1. There would be less traffic congestion on post and off the installation attributable to the reduction in Soldier and dependent personnel. Less traffic would accumulate at access and entry points around peak working hours.

Fort Gordon anticipates that the implementation of Alternative 1 would result in negligible impacts for those VECs discussed above. The following provides a discussion of the VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Alternative 1.

4.7.2 Facilities

4.7.2.1 Affected Environment

Military functions can be divided into a number of land use categories displaying, with a few exceptions, the basic attributes of civilian land use types. Land uses at Fort Gordon include; Headquarters and Administration, Soldier Housing, Soldier Maintenance, Industrial, Community Facilities, Medical Facilities, Operations, Family Housing, Ranges and Training Areas, and Buffer and Recreation. Training Ranges and Training Areas assessments, based upon training

needs and quality requirements, are maintained on record through the Training Support System Sustainable Range program under the guidance of DA G-3/5/7.

4.7.2.2 Environmental Consequences

No Action Alternative

Less than significant impacts would be anticipated under the No Action Alternative. The installation currently has a shortage of facilities; dining facility, housing, warehouse, ranges, etc. The No Action Alternative and known future stationing actions would increase the facility shortage issues. Planned MILCON, temporary facilities and building renovations are planned to correct the deficiencies.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

There would be less than significant impacts to existing facility requirements as a result of the implementation of Alternative 1. Reduction in military authorizations, coupled with known and proposed future stationing actions of the National Security Agency, 7th Signal, Army Cyber Command, etc., could result in an upgrade and correction of facilities deficiencies without the need for new construction. New units moving to Fort Gordon, in addition to other potentially realigned units could occupy buildings and facilities currently on hand with some renovations. This alternative would result in the need for some facilities reduction of outdated facilities to reduce Army operating costs and increase efficiencies.

4.7.3 Socioeconomics

4.7.3.1 Affected Environment

Fort Gordon is located near Augusta, Georgia. The ROI consists of Richmond, Jefferson, McDuffie, and Columbia counties.

Population and Demographics. The Fort Gordon population is measured in three different ways. The daily working population is 8,451, and consists of full-time Soldiers and Army civilians employees working on post. The population that lives on Fort Gordon consists of 5,431 Soldiers and 2,800 dependents, for a total on-post resident population of 8,231. Finally, the portion of the ROI population related to Fort Gordon is 6,832 and consists of Soldiers, civilian employees, and their dependents living off post.

The ROI county population is over 350,000. Compared to 2000, the 2010 population increased in Richmond, McDuffie, and Columbia counties, and decreased in Jefferson County (Table 4.7-3). The racial and ethnic composition of the ROI is presented in Table 4.7-4.

Table 4.7-3. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Richmond	200,000	+0.4
Jefferson	17,000	-1.9
McDuffie	20,000	+3.0
Columbia	125,000	+38.9

Table 4.7-4. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Georgia	56	30	3	9	<1	2	<1
Richmond	38	54	0	4	2	2	0
Jefferson	41	54	0	3	0	1	0
McDuffie	56	40	0	2	0	1	0
Columbia	74	15	0	5	4	2	0

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased in Columbia County. Employment decreased in the State of Georgia, Richmond, Jefferson, and McDuffie counties (Table 4.7-5). Employment, median home value and household income, and poverty levels are presented in Table 4.7-5.

Table 4.7-5. Employment, Income, and Housing

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
Georgia	3,410,505	- 2.1	160,000	47,469	16.60
Richmond	81,854	- 2.3	97,800	34,552	22.60
Jefferson	4,031	- 9.4	69,400	29,835	26.50
McDuffie	6,388	- 14.0	87,400	33,718	20.20
Columbia	26,745	+15.0	163,200	68,986	6.80

Available and occupied housing statistics are illustrated on Table 4.7-6. Information is from the U.S. Census Bureau 2010 census results.

Table 4.7-6. Housing Status by County

Housing Status	Columbia	Jefferson	McDuffie	Richmond
Total Housing	48,626	7,298	9,319	86,331
Occupied Housing	44,898	6,241	8,289	76,924
Owner - Occupied	35,475	4,274	5,651	41,682
Owner – Occupied Housing - population	97,975	11,130	14,637	103,848
Renter - Occupied	9,423	1,967	2,638	35,242
Renter – Occupied Housing - population	25,438	5,273	6,920	86,193
Housing with Minors	16,999	1,782	2,530	21,561
Vacant Housing	3,728	1,057	1,030	9,407
For Rent	949	211	314	3,537

For Sale	1126	86	107	1432
Occasional Use Housing	533	188	146	389

Schools. Children of military personnel attend school in many different counties in the ROI, but predominantly attend schools in Richmond and Columbia counties. Schools in Richmond County received $1.2 million and Columbia County received $480,000 in Federal Impact Aid from the Department of Education in FY 2011.

The Georgia Department of Education collects enrollment counts from all school districts several times throughout any given school year. These are referred to as Full-Time Equivalency (FTE) counts. The figures in Tables 4.7-7 and 4.7-8 are extrapolated from FTE figures taken in the fall and the spring.

Table 4.7-7 illustrates there is a steady trend in growth for both counties. Table 4.7-8 illustrates that Richmond County has a significantly higher minority student population compared to Columbia County.

Table 4.7-7. Fall and Spring Enrollment for Three Academic Years (K-12 totals)

County School System	2008-2009		2009-2010		2010-2011	
	Fall (FTEs)	Spring (FTEs)	Fall (FTEs)	Spring (FTEs)	Fall (FTEs)	Spring (FTEs)
Richmond	31,541	31,072	31,241	31,093	31,089	30,779
Columbia	22,330	22,317	22,839	22,684	23,231	23,094

FTE = Full Time Equivalent

Table 4.7-8. Percentage Enrollment by Race/Ethnicity

Students by Race/Ethnicity	Percentage of Enrollment Broken down by County and Enrollment Year					
	2008-2009		2009-2010		2010-2011	
	Richmond	Columbia	Richmond	Columbia	Richmond	Columbia
Asian	1	3	1	3	1	4
Black	73	17	74	17	73	17
Hispanic	2	4	2	7	3	7
White	21	72	20	68	20	67
Multiracial	2	4	2	5	2	4

Public Health and Safety.

Fort Gordon has its own 911 call center, fire, and emergency services. There are mutual aid agreements with Richmond and Columbia counties.

Police. The Fort Gordon Police Department, a part of the Directorate of Emergency Services, provides law enforcement and property protection at Fort Gordon. Police functions include protecting life and property, enforcing criminal law, conducting investigations, regulating traffic, providing crowd control, and performing other public safety duties. City, county, and state police departments provide law enforcement in the ROI.

Fire. The Fort Gordon Fire Department, a part of the Directorate of Emergency Services, provides emergency firefighting and rescue services at Fort Gordon. Fire prevention is another service provided by the Fort Gordon Fire Department. Fire prevention activities include

providing fire safety advice and ensuring that structures are equipped with adequate fire precautions to ensure that in the event of fire, people can safely evacuate the premises unharmed.

Medical. Fort Gordon supports a range of medical services. The Dwight D. Eisenhower Army Medical Center (DDEAMC) provides healthcare services for military personnel, military dependents, and to military retirees and their dependents. DDEAMC services include audiology/speech pathology, dermatology, dietetics, emergency services, Family medicine, internal medicine, OB/GYN, occupational therapy, ophthalmology, optometry, orthopedics, otolaryngology, pediatrics, physical therapy, psychiatry, surgery, podiatry, psychology, social work, and substance abuse. DDEAMC currently has a contract for birthing services for Army Families with Trinity Hospital in Augusta. Fort Gordon also provides dental services and supports a Warrior Transition Battalion. In addition to the services at DDEAMC, there are plans for a Blood Donor Center and a Consolidated Troop Medical Clinic. Army and Air Force Exchange Service (AAFES) is also breaking ground in FY 2012 on an addition to the Post Exchange which will include a pharmacy. Table 4.7-9 provided the DoD purchased care in the Augusta area.

Table 4.7-9. DoD Purchased Care, Augusta Area

Care Type	FY 2009		FY 2010		FY 2011	
	Outpatient	Inpatient	Outpatient	Inpatient	Outpatient	Inpatient
TRICARE Eligible (0-64 yrs)	$40,406,904	$17,345,190	$41,538,339	$16,927,249	$45,273,187	$17,602,132
Supplemental Health Care Program	$2,283,871	$9,726,049	$2,188,688	$9,031,527	$2,240,978	$11,588,256
TRICARE for Life (65+yrs)	$53,510,483	$23,546,021	$52,542,297	$26,244,098	$48,798,394	$27,436,929
Trinity OB Contract	$3,481,556		$3,747,547		$3,944,320	
Grand Total	**$150,300,074**		**$152,219,745**		**$156,884,196**	

Family Support Services. The Fort Gordon FMWR and ACS provide programs, activities, facilities, services, and information to support Soldiers and Families. Services provided at Fort Gordon include child care, youth programs, and deployment readiness for Families, employment readiness, financial readiness, relocation readiness, exceptional Family member support, Warrior in Transition support, and survivor outreach.

Recreation Facilities. Fort Gordon facilities or programs for recreation include fitness centers, swimming pools, athletic fields, golf course, bowling center, outdoor recreation opportunities, and sports teams.

4.7.3.2 Environmental Consequences

No Action Alternative

Negligible impacts on socioeconomics would be anticipated under the No Action Alternative. No changes in unemployment, support contracts, goods and services purchased, or changes in military operations at Fort Gordon are anticipated under the No Action Alternative. Socioeconomic conditions would remain as described in Section 4.7.3.1. Fort Gordon's operations would continue to provide a beneficial source of regional economic activity.

Alternative 1: Force Reduction (up to 4,300[4] Soldiers and Army Civilians)

The implementation of Alternative 1 would result in significant adverse impacts on the ROI. The ROI currently has unemployment at or exceeding state and national averages, low median income, slow population growth, and a large percentage of the population at the poverty level.

The total annual economic impact of Fort Gordon in the Central Savannah River Area is approximately $2.0 billion. Reductions of military authorizations as a result of the implementation of Alternative 1 would result in similar reductions in construction and support contracts and staff, on the installation and corresponding reductions in housing, retail, hospitality, and entertainment businesses in the CSRA.

Economic Impacts. Alternative 1 would result in the loss of up to 4,300 military employees (Soldiers and Army civilian employees), each with an average annual income of $41,830. In addition, this alternative would affect an estimated 2,409 spouses and 4,144 dependent children for a total estimated potential impact to 6,553 dependents. The total population of military employees and their dependents directly affected by Alternative 1 would be projected to be 10,870 military employees and their dependents.

Based on the EIFS analysis, there would be significant socioeconomic impacts for population in the ROI for this alternative. There would be no significant impacts for sales volume, income, or employment. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.7-10. Table 4.7-11 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.7-10. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Rational Threshold Value	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Positive	9.85	6.53	3.95	2.23
Negative	- 10.61	- 5.85	- 9.52	- 1.42
Forecast Value	- 3.04	- 2.62	- 4.66	- 3.11

Table 4.7-11. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- $273,741,400	- $220,066,900	- 4,840 (Direct) - 1,097 (Indirect) - 5,937 (Total)	- 10,870
Percent	- 3.04 (Annual Sales)	- 2.62	- 4.66	- 3.11

The total annual loss in sales volume from direct and indirect sales reductions in the ROI would represent an estimated 3.04 percent change in total sales volume from the current sales volume of $9.0 billion within the ROI. It is estimated that state tax revenues would decrease by

[4] For socioeconomics calculations at Fort Gordon the Army utilized 4,317 Soldiers and civilian employees which represents 35 percent of the installation's Soldiers, as well as a loss of up to 15 percent of up to civilian employees. As discussed in Chapter 3, this number was rounded to the nearest hundreds place in other areas of the alternative discussion.

approximately $10.9 million as a result of the loss in revenue from sales reductions. Some counties within the ROI supplement the state sales tax of 4 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by 2.62 percent. While 4,317 Soldier and Army civilian positions would be lost within the ROI as a direct result of implementing Alternative 1, EIFS estimates another 523 contract service jobs would be lost, and an additional 1,097 job losses would occur indirectly as a result of a reduction in demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 5,937 jobs, or a -4.66 percent change in regional non-farm employment. The total number of employed non-farm positions in the ROI is estimated to be 127,469. A significant population reduction of -3.11 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 350,000 people that live within the ROI, 10,870 military employees and their dependents would be projected to no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease demand for housing, and increase housing availability in the region. This would lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes Army civilian employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.7-12 shows the total projected economic impacts, based on the RECONS model, that would be projected to occur as a result of the implementation of Alternative 1.

Table 4.7-12. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Rational Threshold Value	Sales Volume	Income	Employment
Total	- $197,376,741 (Local) - $330,703,937 (State)	- $219,408,000	- 4,876 (Direct) - 622 (Indirect) - 5,498 (Total)
Percent	- 2.19 (Total Regional)	- 2.61	- 4.31

The total annual loss in sales volume from direct and indirect sales reductions in the region would represent an estimated -2.19 percent change in total regional sales volume according to the RECONS model, an impact that is 0.85 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately $13.23 million as a result of the loss in revenue from sales reductions, which would be $2.33 million more in lost state sales tax revenue that projected by the EIFS model. Regional income is projected by RECONS to decrease by 2.61 percent, slightly less than the 2.62 percent reduction projected by EIFS. While 4,317 Soldier and Army civilian positions would be lost within the ROI, RECONS estimates another 559 contract and service jobs would be lost directly as a result of the implementation of Alternative 1, and an additional 622 job losses would occur indirectly as a result of the reduction in demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 5,498 jobs, or a -4.31 percent change in regional employment, which would be 0.35 percentage points less than projected under the EIFS model.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 1 would lead to a net reduction of economic activity within the ROI.

Population and Demographics. Fort Gordon anticipates a substantial reduction in military population and training throughput as a result of the implementation of Alternative 1.

Housing. Alternative 1 would increase the availability of barracks space for unaccompanied personnel and the increase the availability of Family quarters. Those outcomes would likely decrease the off-post demand for rentals and purchases of housing. Fort Gordon anticipates long-term, significant adverse economic effects to the housing and rental markets in the ROI.

Schools. Fort Gordon anticipates the potential for significant adverse effects on the local school systems. Schools in Richmond County received $1.2 million and Columbia County received $480,000 in Federal Impact Aid from the Department of Education in FY 2011. This aid totals $1.68 million. These funds could be reduced by up to half ($840,000) if the military authorizations are cut. Furthermore, there has been steady growth to the school enrollments in the area. If the numbers of enrolled students should decline there would be a number of personnel potentially cut from the school systems, including teachers, administrative, and support staff.

Public Health and Safety. Under Alternative 1, the anticipated population decrease at Fort Gordon would likely reduce the demand for law enforcement services, fire and emergency services, and medical care services on and off post. Fort Gordon anticipates potential significant impacts to public health. In FY 2010 Fort Gordon paid local hospitals and health care providers $11.2 million for care of Active Duty Soldiers and maintained a $3.7 million contract with Trinity Hospital for all Obstetrics (OB) care. These contracts provided a total of $14.9 million to local health care facilities. Reduction in military personnel assigned would reduce the amount of local medical contracts. Secondary impacts of loss of revenue to hospitals may be passed on to the local community, increasing their costs or reducing the number of health care providers available. Fort Gordon does not anticipate significant impacts to safety and emergency services under the Proposed Action.

Family Support Services. As a result of Alternative 1, Fort Gordon anticipates a reduced demand for FMWR and ACS programs on post. The demand for Family support services off post would likely decrease also. Fort Gordon anticipates less than significant impacts to Family support services under the Proposed Action.

Recreation Facilities. Use of recreation facilities on post would likely decline as a result of Alternative 1. Fort Gordon anticipates that utilization decreases would be negligible.

Environmental Justice. Within the Fort Gordon ROI, 52 percent of the population is considered minority and 18 percent are living at or below the poverty level. Both categories exceed the national averages of 20 percent and 13 percent, respectively. Of the 55 public schools in Richmond County, 54 (98 percent) of them are considered Title I schools which receive extra federal money because they have high concentrations of low income families and students who qualify for free or reduced price lunch. Included is Freedom Park Elementary School which is located on the Fort Gordon installation. At Freedom Park, 55 percent of the students qualify for free or reduced lunch due to low income. Implementation of Alternative 1 would impact the minority populations in the ROI. Many service industry and construction trade jobs supported by military contracts are filled by minority employees. With the reduction in the military economic influence in Augusta and Richmond counties and on the installation, a large percentage of the population affected would be minority and low income families. In addition, other federal government aid programs, like reduced cost lunches, would likely increase as ROI

unemployment increases due to loss of military jobs and associated service, construction, and support contracts. Richmond, Jefferson, and McDuffie counties have higher percentages of African-American people than the State of Georgia as a whole. In this respect, the adverse impact to the people of these counties represents a disproportionate adverse impact.

4.7.4 Land Use Conflicts and Compatibility

4.7.4.1 Affected Environment

Approximately 50,000 acres (90 percent) of Fort Gordon is used for training missions. Impact areas occupy approximately 13,000 acres and on-post maneuver and training areas occupy approximately 37,000 acres. The remaining 5,590 acres is occupied by cantonment areas which include military housing, administrative offices, community facilities, medical facilities, industrial facilities maintenance facilities, supply and storage facilities, lakes and ponds, recreational areas and forested areas.

Land use within 1 mile of Fort Gordon varies from semi-urban to rural. The major land use east of the installation is developed, making up the greater Augusta area with commercial development along U.S. 1 and Gordon Highway. Further west of Augusta on the north and south sides of the installation, land use becomes a mixture of rural residential, commercial, and undeveloped land. In Columbia County, land use closest to Fort Gordon is mixed, with single-family residential and some mobile home development. Some multi-family development is also scattered throughout the area. Suburban areas are concentrated in the Evans-Martinez area and in the City of Grovetown (Fort Gordon, 2008). Land use adjacent to Fort Gordon in Jefferson and McDuffie counties is agricultural.

In 2003, Georgia amended the Official State Code (O.C.G.A. §36-66-6) to require local governments to inform military commanders of any proposed zoning change within 3,000 feet of an installation boundary. This state requirement to request input and analysis on adjacent land use by the military is the beginning basis for the protection of military mission and capability in Georgia. Additionally, Fort Gordon completed a JLUS in August of 2005. As a result of this study the four counties that Fort Gordon occupies have agreed to direct development in ways that should allow Fort Gordon's mission to continue without conflicts with land use outside the installation. But these agreements have had little success in limiting development on the installation boundaries. In addition, in 2010 Fort Gordon obtained approval of an ACUB proposal. Fort Gordon has entered into a cooperative agreement with Central Savannah River Land Trust and other partners in order to direct the goals, implementation, and administration of the ACUB partnership. Fort Gordon and its primary partner, Central Savannah River Land Trust, have identified priority areas surrounding the installation in which to acquire conservation easements under the ACUB program. However, Fort Gordon has not yet received funding to implement the ACUB at this time.

4.7.4.2 Environmental Consequences

No Action Alternative

Significant but mitigable impacts on land use would be anticipated under the No Action Alternative. Urban growth and incompatible development around the installations borders would continue to encroach on the training mission. Implementation of the approved Fort Gordon ACUB proposal would mitigate incompatible growth and reduce potential future training restrictions.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Regional growth around the installation would likely be slowed or halted due to the loss of military authorizations. The demand for housing and other service industry businesses, like

restaurants and shopping would be reduced with this significant but mitigable reduction in Fort Gordon personnel and associated Family members.

Freedom Park Elementary which belongs to Richmond County but is located on the installation is zoned for Fort Gordon use. Reduction in military authorizations and associated dependants could result in zoning for the school being changed to include areas off the installation and allow students to be bused in from off post onto Fort Gordon to maintain class size. This would increase traffic at the gates and cause additional security concerns as parents not affiliated with Fort Gordon would be accessing the installations school.

4.7.5 Cumulative Effects

Region of Influence

The ROI for this cumulative impact analysis of Army 2020 realignment at Fort Gordon encompasses five counties in the states of Georgia and South Carolina. Augusta, Georgia and Aiken, South Carolina are the largest cities within the ROI. Augusta is the center for commercial manufacturing, transportation, and medical activities in the metropolitan area. Fort Gordon is critical to the economy of the metropolitan area, generating thousands of jobs and billions of dollars in economic activity and tax revenue (CSRA Regional Development Center, 2005). The area around Fort Gordon is primarily rural with the exception of two large urban population centers within Columbia and Richmond counties.

There are numerous planned or proposed actions within the ROI that have the potential to cumulatively add impacts to the Army Force 2020 alternative. Because Fort Gordon has sufficient geographical space to accommodate multiple unit stationing scenarios it has become an installation of choice for Army intelligence and cyber operations, as well as for similar missions of sister services and DoD activities. There are numerous actions are either in progress or reasonably could be initiated within the next 5 years. A number of the Army's proposed projects have been previously identified in the installation's Real Property Master Planning Board and are programmed for future execution. The following list of projects presents some of the projects which may add to the cumulative impacts of the implementation of Army 2020 realignment alternatives.

Fort Gordon Projects (Past, Present, and Reasonably Foreseeable)

Potential Increased Stationing of Soldiers and Army Civilians:

- 124 military (plus an additional 56 Reservists);
- 140 civilians;
- 55 contractors;
- 500 National Security Agency (Proposed);
- 1,500 ARCYBER (EA in progress); and
- Total potential: Increase of 2,319 Soldiers and civilian personnel.

Military Construction and Operation and Maintenance Projects

The continuation of the past and present actions discussed above would continue and DoD would continue to use the installation as an operational and training post for active and reserve personnel and units.

Facilities construction projects, similar to those on the installation, would be performed in order to provide adequate training and support facilities to meet identified DoD missions. Some of these include:

- Hand Grenade Familiarization Range (refurbishment);
- Multi-Purpose Machine Gun Range in Training Area 46;
- Drop Zone Expansion;
- Training Barracks Upgrade Program; and
- Training Classroom Upgrade Program.

Other Agency (DoD and non-DoD) and Other Public/Private Actions (Past, Present, and Reasonably Foreseeable)

- Additional agricultural and open land use areas near the installation would be converted to urban areas (primarily residential);
- Road, bridge, and ROW maintenance and construction by county and local government units would continue;
- The continued construction of new off-post residential, commercial, and industrial development, primarily near the boundary of the installation;
- The continuation of forest management of properties in the proximate community, and continued grazing by domestic livestock and tillage for planting of row crops; and
- The continued construction of ponds and other erosion control features by farmers, developers, and other private and public organizations.

In addition to the actions listed above, beginning in July of 2011, the area's second largest employer, the Department of Energy, Savannah River Site announced that budget cuts and organizational changes would drop the current employment by 20 percent from 11,000 to 9,000 by early 2012. A May 2011 economic study, *The Economic Impact of the Savannah River Site on Five Adjacent Counties in South Carolina and Georgia*, found that every job at Savannah River Site created an additional 1.5 jobs in the surrounding five county area including Columbia and Richmond counties in Georgia. It is anticipated that Fort Gordon employment would similarly create additional jobs in the surrounding areas (USCA, 2011).

Fort Gordon anticipates a range of minor to significant cumulative effects from the Proposed Action on facilities, land use, and socioeconomics. Cumulative impacts for each alternative are as follows:

No Action Alternative

Significant but mitigable cumulative effects would be anticipated under the No Action Alternative. No changes in military authorizations, or local environmental conditions would be anticipated under the No Action Alternative. Installation facility shortages would remain or worsen with additional stationing actions. Incompatible land use and development would continue to encroach on the training mission, unless mitigated by the ACUB program.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Cumulative impacts as a result of the implementation of Alternative 1 could range from minor beneficial to significantly adverse. In addition to land use listed, facilities, and socioeconomics would be adversely cumulatively impacted.

Facilities. Minor beneficial impacts to facilities on Fort Gordon are anticipated as a result of implementing Alternative 1. The 2011 Army ISR Infrastructure report identified shortages in ranges, instruction, administrative, maintenance, storage, medical, Family housing, dining, exchange, commissary, child development, and community support facilities on Fort Gordon. Planned and proposed restationing actions to consolidate cyber, communications, and military intelligence units could result in an additional 2,319 personnel on Fort Gordon. These planned

and potential future stationing actions would require additional temporary or permanent constructed facilities. If implemented, Alternative 1 could result in a reduction of approximately 4,300 personnel on Fort Gordon. The reduction of other units coupled with the addition of 2,319 to consolidate cyber, communications, and military intelligence units would result in a net decrease of 1,998 personnel. These actions cumulatively could reduce or correct the facility shortages without the need for new temporary or MILCON, allow BCT military units to be realigned and further consolidate signal, cyber and military intelligence units onto Fort Gordon.

Socioeconomics. As a result of implementing Alternative 1, the Army anticipates a significant adverse impact on the socioeconomic condition in the ROI. In addition to the impacts described in Section 4.7.3.2, the cumulative reduction in the Department of Energy, Savannah River Site workforce would have a significant adverse impact on the Fort Gordon ROI. A 20 percent reduction in the Savannah River Site workforce (2,000 jobs) followed by a reduction in military authorizations at Fort Gordon (approximately 4,300 jobs), and an estimated 1.5 jobs per each position lost in the ROI would significantly impact the local economy as illustrated in Table 4.7-13 (USCA, 2011).

Table 4.7-13. Economic Impact Forecast System and Rational Threshold Value Summary

Workforce Reduction Description	Number of Jobs Lost
Savannah River Site 20 percent Reduction	2,000
Fort Gordon Implementation of Alternative 1	4,317
1.5 Service Industry Jobs Lost / Savannah River Site and Fort Gordon Jobs Lost	9,475.5
Total Potential Workforce Reduction	**15,792**

As the Central Savannah River Areas two largest employers, reductions in government positions could result in an estimated loss of 15,792 jobs from the local economy.

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Programmatic Environmental Assessment for Army 2020 Force Structure Realignment

Chapter 4
Affected Environment
and
Environmental Consequences

Section 4.8 Fort Hood, Texas
Section 4.9 Fort Irwin, California
Section 4.10 Joint Base Elmendorf-Richardson, Alaska
Section 4.11 Joint Base Langley-Eustis, Virginia
Section 4.12 Joint Base Lewis-McChord, Washington
Section 4.13 Fort Knox, Kentucky
Section 4.14 Fort Lee, Virginia
Section 4.15 Fort Leonard Wood, Missouri

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Assisted by:
Potomac-Hudson Engineering, Inc.
Gaithersburg, MD 20878

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4.8 FORT HOOD, TEXAS

4.8.1 Introduction

Fort Hood, located in Central Texas, is approximately 218,400 total acres and has approximately 132,300 acres of maneuver area suited for mechanized armor and dismounted military training. Fort Hood is located outside of Killeen, Texas. It is halfway between Austin and Waco, about 60 miles from each, within the State of Texas (Figure 4.8-1). It is in Bell County, with some portions of the base in Coryell County. Traditionally Fort Hood has supported training for two armored divisions.

Figure 4.8-1. Fort Hood

Fort Hood is also the location of III Corps Headquarters and its primary subordinate units include the 2/3/4th BCTs of the 1st Cavalry Division, the 1st Air Cavalry Brigade, the 13th Sustainment Command, and other supporting units. Fort Hood has a well-developed training range infrastructure that supports Abrams Tank, Bradley Fighting Vehicle, Apache Helicopter live-fire training, and numerous small arms ranges.

4.8.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Hood does not anticipate any significant adverse environmental impacts as a result of the implementation of Alternative 1 (Force reduction of up to 8,000 Soldiers and Army Civilians) or

Alternative 2 (an installation gain of up to 3,000 Soldiers). As a result of Alternative 1; however, significant socioeconomic impacts to employment and regional population are predicted. Table 4.8-1 summarizes the anticipated impacts to VECs for each alternative.

Table 4.8-1. Fort Hood Valued Environmental Components Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 8,000	Alternative 2: Growth of up to 3,000
Air Quality	Minor	Beneficial	Minor
Airspace	Negligible	Negligible	Negligible
Cultural Resources	Negligible	Minor	Minor
Noise	Negligible	Negligible	Minor
Soil Erosion	Minor	Beneficial	Minor
Biological Resources	Minor	Beneficial	Minor
Wetlands	Negligible	Negligible	Negligible
Water Resources	Minor	Beneficial	Minor
Facilities	Negligible	Minor	Minor
Socioeconomics	Minor	Significant	Beneficial
Energy Demand and Generation	Negligible	Beneficial	Minor
Land Use Conflict and Compatibility	Negligible	Negligible	Negligible
Hazardous Materials and Hazardous Waste	Negligible	Negligible	Negligible
Traffic and Transportation	Negligible	Beneficial	Minor

4.8.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section below, no more than a beneficial or negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- ***Airspace*.** Fort Hood SUA is divided into airspace use subdivisions. Airspace is managed by the FAA through the Houston Air Traffic Control.
    - **R-6302A** encompasses most of the Fort Hood training areas including the live-fire and impact areas and extends to 30,000 feet above MSL.
    - **Area R-6302B** governs the Southeastern side of the Fort Hood training areas and provides airspace for Fort Hood use to 11,000 feet above MSL.
    - **Area R-6302C and R6302D** covers the Southwestern and Northwestern side of the training areas and extend to 30,000 feet above MSL.

- **R-6302E** begins at 30,000 feet MSL and encompasses the same geographical area as R-6302A. It extends to 45,000 feet MSL.

All of the Fort Hood Ranges and the impact areas to include Permanent Dudded Area 94 are contained within R-6302A, which is continually active. Aircraft and associated activities are only allowed within the narrow range area that has already been scheduled. No one is allowed in this area without an EOD escort because of the danger of un-exploded ordnance.

Fort Hood has four Army-operated airfields on-site. Robert Gray Army Airfield is located at West Fort Hood, and Hood Army Airfield is located at the eastern edge of the main cantonment area. Hood Army Airfield is used primarily for helicopters. Longhorn and Shorthorn are located at North Fort Hood and support training and deployment of Army Reserve and National Guard Soldiers. Fort Hood is currently in the process of expanding its SUA, MOA to include 10,000 feet MSL to 17,000 feet MSL, which will greatly improve the capacity to train fixed-wing aircraft as well as UAS.

The No Action Alternative would not produce any conflicts with the existing overlying restricted airspace. Impacts of this alternative would be negligible. Impacts as a result of the implementation of Alternative 1 would be negligible. The use of airspace would not change significantly with the loss of ground units as a result of this alternative. Aviation and UAS would continue to require airspace to support training. Alternative 1 would result in a marginally lower utilization rate of existing SUA airspace as some units with UAS may be inactivated and no longer require use of the existing SUA, which would result in a minor beneficial impact. There would be an anticipated negligible impact to airspace as a result of the implementation of Alternative 2. The use of airspace would not change significantly and additional airspace would not be required; however, scheduling, activation, and utilization of existing SUA would increase slightly if additional UASs were stationed at Fort Hood. The increased operations could cause some minor impacts to air traffic flow within the National Airspace System around Fort Hood. BCT activities would have to be scheduled to coordinate with existing mission activities, to include UAS operations, and ordnance and other large caliber munitions firing that requires the use of airspace over ranges and impact areas. Any training operations requiring increased use of airspace associated with an increase of up to 3,000 Soldiers would continue to be managed through scheduling and balancing training requirements with airspace availability. The impacts to airspace, as a result of either Proposed Action alternatives, would be very minor and would not impact airspace negatively.

- ***Wetlands.*** Waters of the U.S., including wetlands, exist across the installation. These resources range from small emergent wetlands associated with ephemeral streams to large forested wetland complexes adjacent to perennial channels. Currently, efforts are underway to delineate all water features, both jurisdictional and non-jurisdictional, on the installation as project sites are identified and as funding allows. Training activities currently avoid wetlands to the greatest extent possible.

  There would be negligible impact on the installation wetlands as a result of the implementation of any alternative being considered since construction of new ranges is not anticipated as part of the alternatives. Minor impacts would result from maneuver training activities, however, these impacts are not anticipated to be different than those that already occur in the training areas on Fort Hood under any of the alternatives considered.

- ***Land Use Conflicts and Compatibility.*** Land use at Fort Hood is designated as cantonment, maneuver, live fire, and airfields. The cantonment areas are like small cities with industrial, administrative, retail, and housing. Maneuver and live-fire training

areas support combat training activities. Additionally, cattle-grazing is permitted (through 5-year leases) throughout the training areas. Airfields are located adjacent to the cantonment areas and house both fixed and rotary wing assets and support facilities. Fort Hood also has Belton Lake Outdoor Recreation Area. Over 88 percent of the land (more than 191,000 acres) is used for maneuver and live-fire training. No changes in land use, or compatibility are anticipated as a result of the Proposed Action or alternatives. Since no changes in land use or compatibility are anticipated as a result of the Proposed Action or alternatives, the impacts are classified as negligible.

- ***Hazardous Materials and Hazardous Waste***. Specific environmental statutes and regulations govern hazardous material and hazardous waste management activities at Fort Hood. For the purpose of this analysis, the terms hazardous waste, hazardous materials, and toxic substances include those substances defined as hazardous by CERCLA, RCRA, or TSCA. In general, they include substances that, because of their quantity, concentration, or physical, chemical, or toxic characteristics, might present substantial danger to public health or welfare of the environment if released.

  Hazardous materials are managed in accordance with AR 200-1, Environmental Protection and Enhancement (December, 2007), Chapters 9 and 10, for the purpose of minimizing hazards to public health and damage to the environmental. Fort Hood policy is to manage hazardous substances, hazardous material, and hazardous waste in an environmentally acceptable manner. Fort Hood has developed and implemented a Hazardous Material Management Program (HMMP) which focuses on establishing installation level centralized management and visibility of materials containing reportable chemicals or having safety considerations. The concept of centralized management is to manage the materials "from cradle to grave" and reduce hazardous waste generation. Fort Hood's HMMP is designed as part of an initiative to track the life cycle of all hazardous material from procurement to ultimate disposition and minimize use of hazardous material through pollution prevention actions.

  Fort Hood's SPCC Plan and Installation Response Plan address the prevention of unintentional pollutant discharges from the bulk storage and handling of petroleum products and other hazardous materials. The plans detail the specific storage locations, the amount of material at potential spill sites throughout Fort Hood, as well as those spill prevention actions and countermeasures that would be implemented in the event of a spill. All hazardous materials used on post must be accompanied by a material safety data sheet (MSDS) that details the hazards associated with each specific substance. Contractors working on post must comply with the Fort Hood HMMP and obtain approval for all hazardous materials brought on post. Material containing PCBs, asbestos, and lead may not be introduced on military installations. Construction activities would require substances such as fuel and paint, and normal building operations would require the use of cleaning chemicals. The generation of any hazardous waste would be treated as described above, and any solvents used would be recycled and reused.

  No effects would be anticipated on toxic substance usage, as military policy restricts the use of such materials on installations. A consumption report of all products and associated MSDSs used in construction of the facilities associated with this project would be submitted to DPW Environmental Division's Hazardous Material and Air Quality program managers for tracking and emissions calculation purposes. Long-term minor adverse effects would be anticipated from the limited amounts of hazardous material used should there be any construction associated with the Proposed Action or alternatives. Negligible impacts would be anticipated as a result of implementing any of the alternatives. The reduction of up to 8,000 Soldiers would likely also have a negligible impact on hazardous materials and hazardous waste generation or

procedures for how it is treated on the installation. Under Alternative 1, there would be a negligible reduction in quantity of hazardous waste produced, simply because the overall number of units, users, and occupants would be decreased. The increase of up to 3,000 Soldiers would result in a minimal or very low impact with regard to the introduction of more hazardous materials. The impact on the generation, waste, and disposal of classified hazardous waste on the installation would also have a negligible overall impact for all alternatives considered in the PEA. Generation of any hazardous waste would be treated as described above, and any solvents used would be recycled and reused. A consumption report of all products and associated MSDSs used in construction of the facilities associated with this project shall be submitted to DPW Environmental Division's Hazardous Material and Air Quality program managers for tracking and emissions calculation purposes. No impacts would be anticipated on toxic substance usage, as military policy restricts the use of such materials on installations. Under all alternatives, hazardous materials and waste would continue to be managed in accordance with Fort Hood HMMP procedures.

Fort Hood anticipates that the implementation of any of the alternatives would result in negligible impacts for those VECs discussed above. The following provides a discussion of the VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Proposed Action alternatives.

4.8.2 Air Quality

4.8.2.1 Affected Environment

Fort Hood is located in Bell and Coryell counties, which is within the Austin-Waco Intrastate AQCR (40 CFR 81.175). Ambient air quality for the Austin-Waco Intrastate AQCR is classified as in attainment for all criteria pollutants. Unclassifiable areas are those that have not had ambient air monitoring and are assumed to be in attainment with NAAQS.

Fort Hood is a major source of criteria pollutants and a synthetic minor source of HAPs. As such it is required to obtain a Title V air operating permit. Air quality monitoring is conducted outside the installation at the local airport, Skylark Field to determine attainment status, specifically for O_3. Fort Hood emissions are included in the monitoring data as a result of the close proximity of the installation to the monitoring site. To meet regulatory requirements in the Killeen-Temple-Fort Hood Metropolitan Statistical Areas (MSA), the Texas Commission on Environmental Quality (TCEQ) will deploy a second O_3 monitor at a new site in the Temple area. The TCEQ is working on locating this new site, with deployment planned for early 2013. This requirement comes from the 2012 Annual Ambient Air Monitoring Network Review. In 2010, the TCEQ submitted waiver requests for the source-oriented lead monitoring required at the Red River Army Depot near Texarkana, the U.S. Army Fort Hood facility near Killeen, and the Oxbow Calcining facility in Port Arthur. These waivers were subsequently approved by EPA Region 6. The TCEQ has reviewed these sites as part of this year's network review and determined that they continue to meet eligibility requirements. In 2015, the TCEQ will reapply for these waivers as required by the federal rules.

4.8.2.2 Environmental Consequences

No Action Alternative

Although there would continue to be minor short- and long-term fugitive dust impacts from training, these impacts would not exceed threshold levels. Permit conditions would continue to be monitored and met, but no changes to emission sources are anticipated, other than those

mandated by maintenance, replacement, or elimination of sources as they age or are removed from service.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

There would be an anticipated minor beneficial impact to regional air quality from reduced stationary and mobile emission sources. There would be less combustion and generation of NAAQS air pollutants and HAPs associated with military training. In addition, there would be less fugitive dust generated from fewer training events.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be an anticipated minor (low) impact on air quality in the airsheds surrounding Fort Hood as a result of the implementation of Alternative 2. There would be an anticipated increase in air emissions from both mobile and stationary sources that would be generated to support additional Soldiers and their Families. Though Fort Hood can anticipate increased emissions from military vehicles and generators used to support training events, as well as an increase in fugitive dust, the increase of 3,000 Soldiers would have less than significant impacts to regional air quality. It is anticipated Fort Hood would not exceed the emissions limits of its Title V permit or to create any changes in attainment status. Activities that generate air emissions would not qualitatively change though they could be anticipated to increase marginally to support additional Soldiers.

4.8.3 Cultural Resources

4.8.3.1 Affected Environment

Cultural resources are defined by the NHPA as prehistoric and historic sites, structures, districts, or any other physical evidence of human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or any other reason. Depending on the condition and historic use, such resources may provide insight into living conditions in previous civilizations and/or may retain cultural and religious significance to modern groups.

Approximately 98 percent of the training and cantonment areas and 70 percent of the live-fire area have been surveyed for archeological resources (Fort Hood, 2007a). Buildings that are 50 years old or older, or are approaching 50 years of age, could be considered eligible as a cultural resource.

4.8.3.2 Environmental Consequences

No Action Alternative

Impacts to cultural resources from the No Action Alternative would be negligible. Activities with the potential to affect cultural resources are monitored and regulated when anticipated through a variety of preventative and minimization measures.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor impacts are anticipated as a result of the implementation of Alternative 1 at Fort Hood. Removal of temporary facilities would have a very low potential for adverse effects to historic buildings and/or archeological resources. Removal of outdated infrastructure as part of the FRP has limited potential to affect historic structures. Fort Hood has consulted with the SHPO and obtained concurrence for demolition for all but two of its properties as part of the FRP. SHPO consultation would occur prior to any demolition activity that could potentially impact a historic structure or potentially eligible cultural resource. The implementation of Alternative 1 would not be anticipated to affect these two properties.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Alternative 2 is anticipated to have a minor impact to cultural resources. Measures are in place to accommodate training to prevent adverse impacts to cultural resources. The types of training conducted by the additional Soldiers would not change, though some training areas on Fort Hood might be used with more frequency or intensity compared with current baseline conditions. Fort Hood would continue to follow its cultural resource management procedures and processes discussed in the ICRMP in order to protect cultural resources. Fort Hood restricts training activities around significant cultural sites. It is, therefore, unlikely that there would be adverse impacts to cultural resources from mounted vehicular training or from off-road or foot traffic, as this type of training is only conducted in select training areas. The increase of range usage would potentially increase the use of bivouac areas that are adjacent to ranges which could lead to an increased loss of some cultural resources through small-scale ground disturbance activities.

4.8.4 Noise

4.8.4.1 Affected Environment

The Noise Control Act of 1972 (Public Law 92-574) directs federal agencies to comply with applicable federal, state, interstate, and local noise control regulations. Sound quality criteria disseminated by the EPA, the U.S. Department of Housing and Urban Development, and the DoD have identified noise levels to protect public health and welfare with an adequate margin of safety. Noise levels below 65 dB are normally considered acceptable in suitable living environments.

Responses to noise vary, depending on the type and characteristics of the noise, the anticipated level of noise, the distance between the noise source and the receptor, the receptor's sensitivity, and the time of day.

Noise generated from small arms weapons fire, large caliber systems, and artillery is effectively contained on installation lands and maneuver areas at Fort Hood and does not pose compatibility issues with off-post residential communities. Noise associated with training is experienced at off-post location but a majority of NZ II activities do not extend off post and NZ III is fully contained within the installation. Maneuver and training noise is not currently a major issue raised by local communities. No noise-sensitive receptor populations are located near the proposed training areas, where an increase in noise due to training would be anticipated.

4.8.4.2 Environmental Consequences

No Action Alternative

Negligible impacts from noise are anticipated under the No Action Alternative. The acoustic environment of Fort Hood would continue to be affected by military training activities, such as small- and large-caliber weapons gunnery, artillery, and aircraft over flight. Other activities, such as ground maneuver training and exercises resulting in noise created by personnel and vehicles, would continue to contribute noise on Fort Hood, to the same levels and intensity as historically experienced. Noise impacts within the cantonment and living areas would remain very low.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Impacts from noise are anticipated to be negligible and slightly beneficial. Existing ranges would still be utilized for firing the same types of weapons systems and conducting the same types of training. As a result of Alternative 1, however, Fort Hood would experience an

anticipated reduction in the frequency of noise generating training events. Fort Hood's remaining BCTs would continue to conduct maneuver and live-fire training in the field; however, the number of weapons qualifications and maneuver training events could be anticipated to decrease in proportion with the number of Soldiers stationed at the installation. Noise impacts would likely remain comparable to current conditions, though less frequent. A reduction of 8,000 Soldiers would have no impact on the weaponry being utilized on existing ranges and would not be anticipated to change current noise contours or change the risk potential for noise complaints. The current frequency and activities of aviation training activities, a contributor of noise at the installation, would not be anticipated to change, as aviation units would not be impacted by these decisions.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be a minor impact on the installation and surrounding communities by the re-stationing of up to 3,000 Combat/Combat Support Soldiers. No change in noise contours would occur. Given that there are no new types of activities that would occur as a result of stationing of these Soldiers, just an increase in the types of existing noise generating activities, only minor impacts would occur as a result of implementing this alternative.

4.8.5 Soil Erosion

4.8.5.1 Affected Environment

Geology. The strata underlying Fort Hood, with the exception of the recent alluvium and river terrace deposits, are consolidated sedimentary rocks of Cretaceous age and belong to the Comanche Series. The erosion of these Cretaceous rocks over the past 70 million years and the deposition of unconsolidated materials along the major streams have produced the present landscape of Fort Hood (USACE, 1987). The major rock layers beneath Fort Hood are the Glen Rose formation, Paluxy Sand, Walnut Clay, Comanche Peak formation, Edwards Limestone-Kiamichi Clay complex, Denton Clay-Fort Worth Limestone, and Duck Creek Limestone complex. The major floodplains are filled with alluvium and river terrace deposits.

The Balcones Fault Zone passes immediately east of the installation, running north to southwest. Erosion of this land over time has created the irregular, steep sloping terrain on the installation (USACE, 1987).

When maneuver actions intersect natural drainage patterns, destabilization occurs resulting in an increase in erosion. Surface water is affected as the soil is transported in the runoff during rainfall events resulting in sedimentation.

Through the implementation of BMPs during construction and training detailed in the installation's INRMP, loss rates have decreased from approximately 33 tons per acre per year to 4.4 tons per acre per year in the heaviest maneuver training areas. This decrease has been achieved through the development of gulley plugs, low-water crossing structures, sedimentation collection ponds, ripping, mulch application, and re-vegetation.

Soil types on the installation were determined using the USDA, Natural Resources Conservation Service, and Bell County and Coryell County Soil Surveys (USDA, 1977 and 1985, respectively). Soil types found on Fort Hood and a brief description of them can be found in Table 4.8-2.

1 **Table 4.8-2. Fort Hood Soil Associations**

Map Symbol	Mapping Unit	Description
AIC	Altoga silty clay	Deep, gently sloping to strongly sloping, clayey soils on foot slopes below limestone hills and ridges. The soil is well drained, with moderate permeability, and medium runoff. The soil is well suited as a pasture.
Bo	Bosque clay loam	Deep, nearly level soil on floodplains along major streams. The soil is well drained, with moderate permeability and slow runoff. It is well suited as a pasture.
BRE	Brackett association	Gently sloping to strongly sloping and rolling, calcareous, loamy soils. Soils forming in loamy material underlain by soft limestone. Well drained, moderately slow permeability, rapid runoff.
BtC2	Brackett-Topsey association	Deep loamy soils on undulating uplands. The soil is well drained, with moderately slow permeability, and medium runoff. The erosion hazard is moderate for Brackett soils and severe for Topsey soils. This association is moderately suited for pasture.
CoB2	Cisco fine sandy loam	Deep, gently sloping soil on convex slopes of uplands. The soil is well drained, with moderate permeability and medium runoff. It is moderately suited as pasture.
DPB	Denton association	Deep or moderately deep, occurring mostly on Fort Hood. Soil areas are in saddles between hills and foot slopes. Underlain by limestone and interbedded marl. Well drained, slow permeability, medium to rapid runoff.
DrC	Doss-Real complex	Shallow, loamy soils on side slopes that have a benched appearance because of horizontal limestone outcrops. They are well drained, with moderately slow permeability, and medium to rapid runoff. Erosion potential is moderate.
EvB	Evant silty clay	Shallow, gently sloping soil on plane to convex uplands. It is well drained, with slow permeability and slow runoff.
Fr	Frio silty clay	Deep, nearly level clayey soil on floodplains of major streams. Flooded every 3 to 10 years for a duration of less than one day. The soil is well drained, with slow permeability and slow runoff.
KrB	Krum silty clay	Deep, nearly level to gently sloping and undulating calcareous soils. Mostly on the foot slopes of the higher limestone hills and in narrow valleys that are drainage ways from the hill country. Most occur on Fort Hood. Well suited to crops. Well drained, moderately slow permeability, slow to rapid runoff.
LeB	Lewisville clay loam	Deep, gently sloping soil on major stream terraces. The soil is well drained with moderate permeability and medium runoff. It is well suited for pasture.
MuB	Minwells-Urban land complex	Deep and gently sloping soils on terraces of the Leon River. The soil is well drained, with slow permeability and medium runoff.
NuC	Nuff very stony silty clay loam	Deep, gently sloping soil on the sides of low ridges and stream divides. The soil is well drained with slow permeability and medium runoff.

Table 4.8-2. Fort Hood Soil Associations (continued)

Map Symbol	Mapping Unit	Description
ReF	Real-Rock outcrop complex	Shallow, moderately steep to steep soils with areas of rock outcrop on side slopes of uplands, located on hill slopes or bluffs overlooking rivers or streams. Real soil is well drained, with moderate permeability and very rapid runoff. The complex is not suited for pasture.
SaB	San Saba clay	Moderately deep, nearly level to gently sloping, calcareous, clayey soils in low areas on limestone uplands. The soil is moderately well drained, with very slow to rapid permeability (depending on soil moisture), and slow to medium runoff. Well suited as pasture.
SIB	Slidell silty clay	Deep, gently sloping soil in valley fill areas along drainage ways. The soil is well drained, with very slow permeability and slow to medium runoff. Well suited as pasture.
TpC	Topsey-Pidcoke association	Deep and shallow loamy soils on undulating uplands. Topsey soil is well drained, with moderately slow permeability and medium runoff. Pidcoke is well drained, with moderately slow permeability and medium runoff.

4.8.5.2 Environmental Consequences

No Action Alternative

Minor adverse impacts are anticipated under the No Action Alternative. Fort Hood would continue mechanized training, to include impacts to soils from removal of or damage to vegetation, digging activities, ground disturbance from vehicles, and ammunition or explosives used in training events. The installation's ITAM program conducts monitoring, rehabilitation, and maintenance and repair on areas of high use such as drop zones, artillery firing positions, observation points, and ranges.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Impacts from soil erosion are anticipated to be negligible and potentially beneficial under this alternative. Alternative 1 includes the reduction of no longer needed facilities that could result in adverse impacts from demolition and temporary exposure of bare soils to rain and water and wind erosion. These impacts, however, would be short term in duration. Overall, there would be beneficial long-term impacts from reduced training and more opportunities for land rehabilitation and natural rest and recovery of the landscape. There would be less soil erosion and sedimentation attributable to training activities.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be minor impacts to soil resources at Fort Hood resulting from the implementation of Alternative 2 and the associated increase in the frequency of unit maneuver and live-fire training events. Exposed soils would become more susceptible to erosion, and soil productivity (i.e., the capacity of the soil to produce vegetative biomass) may decline in disturbed areas. With the potential addition of up to 3,000 more Soldiers, more vehicles would impact Fort Hood's training areas. More vegetation would be denuded from the training areas by vehicular traffic and more bare soils would be exposed to water and wind erosion. A greater amount of sedimentation would be anticipated to occur in the regional surface waters. Fort Hood's ITAM program would continue to monitor training lands for disturbance, and would plan and

implement rehabilitation and erosion control measures in areas of high use. Management procedures outlined in the installation's INRMP would also assist with soil conservation.

4.8.6 Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species)

4.8.6.1 Affected Environment

Threatened and Endangered Species. All federal agencies are required to implement protection programs for threatened and endangered species and to further the purposes of the ESA [16 U.S.C. 1532 et. seq.] of 1973, as amended. In accordance with AR 200-1, Fort Hood has prepared an ESMP (Fort Hood, 2007b) which provides comprehensive guidelines for maintaining and enhancing populations and habitats of federally-listed and candidate species on Fort Hood while maintaining mission readiness consistent with Army and federal environmental regulations. A list of threatened, endangered, or other species of concern at Fort Hood is provided in Table 4.8-3.

Table 4.8-3. Protected, Candidate, and Species of Concern and their Occurrence on Fort Hood

Common Name	Scientific Name	Federal Status	State Status
Amphibians			
Jollyville Plateau	*Eurycea tonkawae*	Candidate	N/A
Salado Springs Salamander	*Eurycea chisholmensis*	Candidate	N/A
Birds			
American Peregrine Falcon	*Falco peregrinus anatum*	N/A	Threatened
Bald Eagle	*Haliaeetus leucocephalus*	Delisted/Monitored	Threatened
Black-capped Vireo	*Vireo atricapilla*	Endangered	Endangered
Golden Cheeked Warbler	*Dendroica chrysoparia*	Endangered	Endangered
Interior Least Tern	*Sterna antillarum*	N/A	Endangered
Peregrine Falcon	*Falco peregrinus*	N/A	Threatened
Sprague's Pippit	*Anthus spragueii*	Candidate	N/A
Whooping Crane	*Grus Americana*	Endangered	Endangered
Mammals			
Red Wolf	*Canis rufus*	N/A	Endangered
Cave Myotis	*Myotis velifer*	N/A	Species of Concern
Fish			
Smalleye Shiner	*Notropis buccula*	Candidate	N/A
Mollusks			
False Spike Mussel	*Quadrula mitchelli*	N/A	Threatened
Smooth Pimpleback	*Quadrula houstonensis*	N/A	Threatened
Texas Fawnsfoot	*Truncilla macrodon*	N/A	Threatened
Reptiles			
Texas Horned Lizard	*Phrynosoma cornutum*	N/A	Threatened

Source: USFWS, 2011; TPWD 2009
N/A = Not Listed in Bell County

Three federally-listed species are found on or near Fort Hood. The golden-cheeked warbler nests on Fort Hood from March through July. The black-capped vireo nests on Fort Hood from March through August. Whooping cranes are rare migrants that are seldom observed passing through Fort Hood. However, five observations of whooping cranes on the installation were documented in December 1986 and three whooping cranes were documented on the installation in March 2010. They may fly over the installation during spring and fall migration and stop over at aquatic habitat on the installation and at Belton Lake (USFWS, 2005). The bald eagle, which is now de-listed, winters regularly on Belton Lake and the shoreline along the eastern border of Fort Hood. Eagles arrive during mid- to late-October, and depart generally around the end of March. Fort Hood restricts activities near roost sites when bald eagles are known to be in the area (USFWS, 2005).

The golden-cheeked warbler nests in mixed oak juniper woodland, preferring older stands with tall, old (approximately 40 years and older) trees and closed canopies (USFWS, 1992). Based on recent monitoring efforts, the golden-cheeked warbler population size on Fort Hood increased substantially over the past 10 years (Anders, 2001). Threats to the species include habitat destruction by urban development, brush clearing, oak wilt, range wildfires, and nest parasitism from brown-headed cowbirds (*Molothrus ater*).

The black-capped vireo nests in shrubby re-growth resulting from various disturbances, including wildfire or mechanical removal of woody vegetation. Good nesting habitat for black-capped vireo's includes a wide diversity of hardwoods in a patchy, low-growing configuration with open, grassy spaces between patches of woody vegetation. The black-capped vireo is threatened by cowbird parasitism, habitat loss from browsing animals (cows, goats, deer, and exotics), fire suppression, and urban development.

Texas Parks and Wildlife Department listed the Texas horned lizard as threatened in 1977 (Handbook of Texas Online). The lizard is one of three horned lizard species in Texas and was historically distributed across most of the state except far eastern areas (Price & Morse 1990). It is predominantly found in the Dallas and Fort Worth metroplex area. Central Texas, specifically the Edwards Plateau ecoregion, where portions of Fort Hood are, has been documented as having a decline of the species. It is unknown why the species began to decrease in numbers, but urbanization and the prevalence of red imported fire ants (*Solenopis invicta*) may be associated with the lizard decline (Donaldson, Price & Morse, 1994).

In December 2009, Texas Parks and Wildlife Department listed 15 species of mussels as threatened. One of these species, the smooth Pimpleback, is known to occur on or near Fort Hood. They dwell in the reach of Leon River that bounds North Fort Hood, north of SH 36 (Fort Hood, 2012).

Migratory Birds. The MBTA protects all species covered under four treaties the U.S. signed with Canada (1916), Mexico (1936), Japan (1972) and the Russian Federation (1976). This includes all native birds in the U.S., except those non-migratory species such as quail and turkey that are managed as game by the states. A 1988 amendment to the Fish and Wildlife Conservation Act mandates the USFWS to identify species, subspecies, and populations of migratory non-game birds that without additional conservation actions are likely to become candidates for listing under the ESA of 1973. Many species of migratory birds inhabit Fort Hood.

Migratory birds as defined by the MBTA means any bird, whatever its origin and whether or not raised in captivity that belongs to a species listed in CFR 50 Section 10.13. Migratory birds by definition also include any mutation or a hybrid of any species named in the 50 CFR and also includes all parts, nests, or eggs of any such bird, and "any product, whether or not

manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof" (50 CFR § 10.13).

Under provisions of the MBTA, no one may attempt to take, capture, or kill, pursue, hunt, capture, kill, possess, sell, purchase, barter, offer for sale, import, export, or transport any migratory bird, or their parts, including feathers, nests, or eggs—except under the terms of a valid permit issued in accordance with federal regulations as spelled out in 50 CFR §13.21.

Use of Fort Hood and its training areas fall under the exempted category of "military readiness activities", based on the Take of Migratory Birds by the Armed Forces Rule, final rule 28 February 2007 (Federal Register volume 70, pages 8931-8950). In passing the Authorization Act, Congress determined that allowing incidental take of migratory birds as a result of military readiness activities is consistent with the MBTA and the treaties. Construction and maintenance of facilities do not fall under the exemption; however, range and training land maintenance are military readiness activities that are exempt. The U.S. Army Environmental Command issued interim guidance for the unintentional take of migratory birds for actions other than military readiness in July 2008. The guidance states that an installation's INRMP is required to address migratory bird management and conservation and should include management practices to avoid or minimize adverse impacts on migratory birds to the greatest extent practical. Further, the INRMP needs to focus on and sufficiently address those activities that cannot be delayed until after the nesting season. Fort Hood complies with this guidance.

Bats. Seven bat species are known to inhabit Fort Hood where they forage and drink along creeks, tributaries, and ponds. Some of the bats are listed as "Species of Concern" by the USFWS. Bats use naturally occurring roosts such as caves, rock shelters, crevices (rock and exfoliating bark), tree cavities, tree foliage, and bird nests to sleep during the day, raise young, and hibernate. "Forest bats" (species that roost in trees) are known to inhabit tree crevices, cavities, and canopies on Fort Hood, especially tree roosts which occur along watercourses.

Fish. The fish and wildlife populations in the project area are characteristic of those found on the Edwards Plateau and Lampasas Cut Plains regions. Thirty-two species of fish have been documented from the lakes, ponds, and streams on the installation. The common species are the red shiner (*Cyprinella lutrensis*), the blacktailed shiner (*Notropis venustus*), and the bullhead minnow (*Pimephales vigilax*), and various other species of the minnow (*Cyprinidae*) or sunfish (*Centrarchidae*) families (USACE, 1999). Comprehensive lists of fish, birds, and cave-dwelling species found on the installation are available in the appendices of the INRMP; which can be obtained by contacting the DPW Natural Resources Management Office at (254)287-2885.

Wildlife. The various habitat types in the project area provide for wildlife communities characteristic of the Edwards Plateau, Blackland Prairie, and the Cross Timbers ecoregions. Species observed on Fort Hood are listed in Table 4.8-4.

Table 4.8-4. Species Observed on Fort Hood, Texas

Common Name	Scientific Name
Birds	
Cardinal	*Cardinalis cardinalis*
Mourning dove	*Zenaida macroura*
Carolina chickadee	*Poecile carolinensis*
Mockingbird	*Mimus polyglottos*
Turkey vulture	*Cathartes aura*
Wild turkey	*Meleagris gallopavo*

Table 4.8-4. Species Observed on Fort Hood, Texas (Continued)

Common Name	Scientific Name
Mammals	
White-tailed deer	*Odocoileus virginianus*
Black-tailed jackrabbit	*Lepus californicus*
Cottontail rabbit	*Sylvilagus* sp.
Raccoon	*Procyon lotor*
Deer mouse	*Peromyscus maniculatus*
Hispid cotton tat	*Sigmodon hispidus*
Eastern wood tat	*Neotoma floridana*
Reptiles and Amphibians	
Blanchard's cricket frog[1]	*Acris crepitans blanchardi*
Bullfrog[1]	*Rana catesbeiana*
Texas greater earless lizard[2]	*Cophosaurus texanus*
Collared lizard[2]	*Crotaphytus collaris*
Western diamondback rattlesnake[2]	*Crotalus atrox*
Western narrow-mouthed toad[2]	*Gastrophryne olivacea*
Texas spiny lizard[3]	*Sceloporus olivaceus*
Short-lined skink[3]	*Eumeces tetragrammus brevilineatus*
Rio Grande leopard frog[3]	*Rana berlandieri*
Texas patchnose snake[3]	*Salvadora grahamiae lineata*

[1]Representative of eastern U.S. Communities.
[2]Representative of western U.S. Communities.
[3]Representative of southern U.S. Communities.

Vegetation. The combination of soils, topography, climate, and human activities has produced a diverse mix of grassland and woodland vegetative communities or habitats within the installation. Fort Hood is in the southernmost extension of the Cross Timbers and Prairies Eco-region and the northeastern reaches of the Edwards Plateau Eco-region. Woodlands in the area are closely representative of Edwards Plateau vegetative associations. Three types of forest and shrub communities are found on Fort Hood including coniferous (evergreen), deciduous (sheds leaves in fall), and mixed forests and shrub communities. The coniferous woodlands on the installation are dominated by Ashe juniper (*Juniperus ashei*). Deciduous forests and shrubs are generally found in lowlands and protected slopes; they are relatively uncommon on the installation.

4.8.6.2 Environmental Consequences

No Action Alternative

Minor adverse impacts would occur at Fort Hood under the No Action Alternative. Fort Hood would continue to adhere to its existing resource management plans and to minimize further and monitor any potential effects. Units are briefed prior to each training event regarding sensitive areas on post, such as protected species habitat, and what is and is not allowed within certain areas at certain times of year to limit species impacts. The implementation of management measures consistent with the Fort Hood INRMP would minimize any such impacts. Implementation of minimization measures detailed in the Fort Hood INRMP would also minimize degradation of vegetation and grasslands. The impacts to vegetation, as a result of

both alternatives, therefore, would be long term due to training, but minor because they are no different than the current activities that already take place on Fort Hood. There is a large population of fish, bats, and other wildlife on Fort Hood. Displacement of wildlife from training does occur; however, wildlife populations are habituated to training noise and disturbance and typically move to other suitable habitat when training events occur.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor beneficial impacts to biological resources as a result of implementation of Alternative 1 are anticipated. Scheduling conflicts for training area access to conduct natural resource monitoring and management activities would be reduced with a projected decrease in the amount of training being conducted. Proactive conservation management practices, such as those outlined in the INRMP, would be more easily accomplished with reduced mission throughput. The frequency of disturbance of wildlife from training would decrease as a result of this alternative.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Minor adverse impacts are anticipated as a result of the implementation of Alternative 2. The increase in the number of Soldiers is less than 10 percent above the current level. While this moderate force augmentation would increase traffic in the training lands and ranges, it would not cause significant degradation or destruction of threatened and endangered species or rare species habitats. Fort Hood proactively manages its conservation programs within the installation's training areas. Access is essential to conduct management actions (prescribed burning, etc.) and to conduct monitoring in order to demonstrate that populations of threatened and endangered species are stable or increasing. Fort Hood would continue to work with range operations to schedule endangered species monitoring and habitat management. No scheduling conflicts are anticipated. The implementation of management measures consistent with the Fort Hood INRMP would minimize any such impacts. Implementation of minimization measures detailed in the Fort Hood INRMP would also minimize degradation of vegetation and grasslands. Therefore, the impacts to vegetation as a result of both alternatives would be long term due to training, but minor because they are no different than the current activities that already take place on Fort Hood. Displacement of some wildlife could occur with the increase of 3,000 Soldiers; however, displaced wildlife would move to another favorable living environment. Wildlife populations on Fort Hood have adapted to live fire, maneuver, and other training on the ranges, and are not anticipated to react adversely to additional training.

Streams and creeks are located within the proposed project area, and fish would be temporarily displaced as a result of the repair of the associated low water crossing. The construction; however, would not impede the flow of water across the creek so impacts are short term and minor.

4.8.7 Water Resources

4.8.7.1 Affected Environment

Surface Water. Fort Hood is located in the Brazos River Basin. Surface water consists of numerous small to moderate-sized streams, which generally flow in a southeasterly direction. It has approximately 200 miles of named intermittent and perennial streams with numerous additional tributaries of those features. Fort Hood also contains more than 200 water impoundments that equal approximately 692 surface-acres. Most of these are used for flood control, sediment retention, wildlife and livestock water, and fish habitat. A few of the impoundments serve as either wash racks or closed loop storage ponds. Additionally, Fort

Hood shares 43 miles of shoreline with Belton Lake. Belton Lake is owned and operated by the USACE for flood control, water supply, and recreation.

Most of Fort Hood lies within the Leon River watershed. The watershed has a drainage area of 3,533 square miles and covers parts of Eastland, Comanche, Mills, Hamilton, Coryell, and Bell counties. The Leon River is formed by the confluence of its north, middle and south forks in Eastland County. The waterway flows about 185 miles southeast, eventually joining the Lampasas River to form the Little River. The Leon River and Cowhouse Creek form the two arms of Belton Lake, and Owl Creek flows directly into the Leon River arm. Tributaries of Nolan Creek, including North Nolan Creek and tributaries of South Nolan Creek, flow southeast and leave the installation. Nolan Creek enters the Leon River below Belton Lake. The southern half of West Fort Hood lies within the Lampasas River watershed. Reese Creek and its tributaries flow south toward the Lampasas River. Stormwater flows are also important to the management of surface water. The flows can introduce sediments and other contaminants into lakes, rivers, and streams. Multiple areas of impervious surfaces can overwhelm water bodies within the drainage.

Water quality data on Fort Hood streams indicates that large portions of the training areas are subject to sheet and gully erosion. One of the most substantial impacts to surface water resources is from siltation caused by runoff. Areas disturbed by construction of ranges as well as vehicle traffic including training maneuvers and directly crossing creek beds are major contributors to erosion and runoff.

Soil erosion on the installation has resulted in decreased water quality and increased sedimentation in portions of Belton Lake as well as smaller water bodies and tributaries, including the Leon River on the installation (USACE, 1999). The Blackland Research and Extension Center Water Science Laboratory in Temple, Texas, monitors sediment and other water quality parameters at 13 locations across Fort Hood. Soil erosion management actions performed in accordance with the Fort Hood INRMP would help to control the sedimentation loads associated with the Proposed Action and alternatives.

Waters of the U.S. Waters of the U.S. also exist on the installation. These resources range from small emergent wetlands associated with ephemeral streams to large, forested wetland complexes adjacent to perennial channels.

Training, for the most part, is not a regulated activity under Section 404 of the CWA. Since no construction of new ranges is being considered, there would minimal, if any, impacts under Section 404 of the CWA. If any construction is proposed, potential impacts would be evaluated for compliance with Section 404 and proper permitting obtained, if necessary. Appropriate consultation and compensatory mitigation measures would also be implemented if required by issued permit.

Water Supply. Fort Hood has water rights to 12,000 acre-feet of water in Belton Lake. The installation purchases treated drinking water from Bell County Water Control & Improvement District No. 1 for South Fort Hood and West Fort Hood. North Fort Hood's drinking water is purchased from the Gatesville Regional Water Supply. Belton Lake is the primary water supply for Fort Hood and many of the surrounding communities, while Stillhouse Hollow Lake serves as a water supply for other nearby areas.

Wastewater. Fort Hood has one TPDES wastewater permit. This covers the sewage treatment plant at the Belton Lake Outdoor Recreation Center. This plant is very small and treats only the wastewater from the restroom facilities at the camping areas. There are no other wastewater treatment facilities on Fort Hood. All wastewater flows through the sanitary sewer and is treated by Bell County on the two southern cantonments, and the City of Gatesville at North Fort Hood.

Sanitary sewer overflows have been noted as a potential source of contamination of water resources on Fort Hood. There are records of occasional sanitary sewer overflows across the installation, with a greater number occurring in or near Clear Creek and South Nolan Creek. These systems are now completely privatized, and improvement projects have been implemented that reduce the number and volume of spills that occur.

Stormwater. Although precipitation amounts can vary greatly from year to year, Fort Hood averages almost 34 inches of rainfall per year with most occurring during the months of May, June, and October. Currently, Fort Hood has a TPDES general permit to discharge stormwater from covered industrial activities. Fort Hood also has coverage as a regulated operator under a MS4. Fort Hood maintains a spill response team that is notified and any spills are contained before reaching the storm drain system. Therefore, there is a low risk to stormwater resources as a result of these minimization methods.

4.8.7.2 Environmental Consequences

No Action Alternative

The No Action Alternative would have minor adverse effects to water resources. No change from existing conditions would occur and all construction, operation, and maintenance projects already under way have obtained the TPDES permit and other applicable permits and are operating in adherence to their guidance. Training activities would continue, both on ranges and training lands, with adverse impacts mitigated via the ITAM land rehabilitation program.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor beneficial impacts are anticipated as a result of the implementation of Alternative 1. A loss of up to 8,000 Soldiers and Army civilians would reduce traffic in Fort Hood's training areas, decreasing the chance of potential surface water impacts and fuel spills. The demand for potable water would also be diminished, and implementation of Alternative 1 would create additional wastewater treatment capacity for other uses at the installation. A decrease in troops by 8,000 would decrease drinking water demand and wastewater generation.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

The addition of up to 3,000 Soldiers would be anticipated to have a minor impact on the installation's watershed, water demand, and associated treatment systems. The addition would only slightly increase water demand for consumption. Vehicle washing associated with the increased training is accomplished by using several closed loop wash racks.

4.8.8 Facilities

4.8.8.1 Affected Environment

Fort Hood Military Reservation encompasses over 218,000 acres. The installation is comprised of three cantonment areas, two instrumented airfields, and many maneuver and live-fire training areas. The cantonment areas are primarily for urban uses and are designated the main cantonment area, West Fort Hood, and North Fort Hood. The main cantonment area and Hood Army Airfield are located at the southern edge of the training area and adjacent to Killeen, Texas. West Fort Hood is located south of U.S. Highway 190, near the City of Copperas Cove, Texas, and includes the Robert Gray Army Airfield and Killeen-Fort Hood Regional Airport. North Fort Hood, located near Gatesville, Texas, is the primary site for Army Reserve and National Guard training, equipment service, and storage (U.S. Army, 2004).

4.8.8.2 Environmental Consequences

No Action Alternative

Impacts to facilities would be negligible under the No Action Alternative. Fort Hood's current facility shortfalls have been prioritized and are seeking or have received Army funding. The installation would continue to use its existing facilities and cantonment areas as they are currently being used and maintained.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor impacts are anticipated as a result of the implementation of Alternative 1. An increase in the Financial Readiness Program and facilities demolition at Fort Hood would occur under this alternative. Older, less efficient facilities nearing the end of their life-cycle would be demolished when no longer needed to support Soldiers or their Families to save the Army on maintenance and energy requirements. Facility usage and availability for the remaining population would not be affected. The reduction of Soldiers would allow Fort Hood to re-purpose some facilities for new uses and dispose of many of its re-locatable buildings and temporary structures currently being used to support installation administrative functions.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be minor impacts to facilities under Alternative 2. Increased Soldier strength of 3,000 would be reflected through increased usage throughout the cantonment area. Increased activities within the training and range areas would be anticipated to cause long-term facility impacts due to increased human presence. The Real Property Master Plan would require modifications to allow for implementation of Alternative 2. Some additional construction of facilities would be needed to support new Soldiers stationed at Fort Hood. Some of these facilities would include a battalion headquarters facility, company operations facility, motor pool, and barracks. The increase would lead to the retention of some re-locatable facilities until permanent facilities are built.

4.8.9 Socioeconomics

4.8.9.1 Affected Environment

The ROI consists of Fort Hood and Bell, Coryell, McLennan, and Falls counties. Fort Hood's population and workforce has long been an essential element of the local and regional demography and economy.

Population and Demographics. The Fort Hood population is measured in three different ways. The daily working population is 47,204, and consists of full-time Soldiers and Army civilian employees working on post. The population that lives on Fort Hood consists of 17,254 Soldiers and 18,570 dependents, for a total on-post resident population of 36,094. Finally, the portion of the ROI population related to Fort Hood is 75,438 and consists of Soldiers, civilian employees, and their dependents living off post.

The ROI county population is approximately 640,000. Compared to 2000, the 2010 population increased in Bell, Coryell, and McLennan counties, and decreased in Falls County (Table 4.8-5). The racial and ethnic composition of the ROI is presented in Table 4.8-6.

Table 4.8-5. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Bell	310,000	+ 30.4
Coryell	75,000	+ 0.5
McLennan	235,000	+ 10.0
Falls	18,000	- 3.8

Table 4.8-6. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Texas	45	11	4	38	0	1	0
Bell	51	20	0	22	3	3	1
Coryell	62	15	1	16	2	3	1
McLennan	59	14	0	24	1	1	1
Falls	53	25	0	21	0	1	0

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased in the State of Texas and Bell, Coryell, and McLennan counties, and decreased in Falls County (Table 4.8-7). Employment, median home value and household income, and poverty levels are presented in Table 4.8-7.

Table 4.8-7. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
Texas	8,925,096	+ 11.20	118,900	48,286	17.10
Bell	81,198	+ 7.90	109,100	45,796	15.30
Coryell	10,553	+ 39.70	88,800	42,853	16.40
McLennan	94,548	+ 4.30	97,200	38,963	22.80
Falls	1,785	- 28.10	60,300	31,585	23.20

Fort Hood has extensive housing on post for Families and single Soldiers. Fort Hood has over 6,000 homes in 13 housing areas, many of which have recently been renovated as part of privatization. In addition to these homes, Fort Hood provides single Soldiers with barracks space for accommodations. Existing homes on post include single-family and multi-family homes, from two to five bedrooms. A large percentage of Fort Hood Soldiers also opt to live in private rental housing or own homes in the communities surrounding Fort Hood.

Schools. Killeen Independent School District serves the communities of Killeen, Fort Hood, Harker Heights, and Nolanville. The student enrollment for the 2011-2012 school year was

41,172. There were 23,200 students in elementary schools, 8,453 middle school, and 9,519 high school students (KISD District Improvement Plan, 2011). Ethnic breakdown for the district is provided as follows: 33.4 percent African American, 26.1 percent Hispanic, 29.6 percent White, 4.2 percent Asian/Pacific Islander, and 0.9 percent Native America.

Approximately 50 percent of students enrolled were military Family members. The district employs about 6,100 staff members, making it the second largest employer in the ROI (https://www.killeenisd.org/frontPageV2/).

The Copperas Cove Independent School District serves the community of Copperas Cove. The student population for the 2010-2011 school year was 8,324 students (http://www.ccisd.com). Exact population by school is unknown; however, it is estimated that approximately 40 percent of the student population are military Family members. However, ethnic breakdown for the district is provided as follows: 21.3 percent African American, 19.5 percent Hispanic, 49.9 percent White, 2.8 percent Asian/Pacific Islander, and 0.7 percent Native American. Further information on the student population notes that 40.7 percent of students are considered 'At-Risk' and 48.3 percent of students are classified as "Economically Disadvantaged" (http://www.ccisd.com). The district employs approximately 1,300 staff (http://www.ccisd.com).

Public Safety, Fire and Emergency Services. The Fort Hood Directorate of Emergency Services handles the day to day police operations on the installation. They do this with a combination of Active Duty military police and civilians contractors. In January 2011, the ratio per day was 33 Soldiers and 28 civilians on patrol across the installation. The Fort Hood Fire Department responds to emergencies involving structures, facilities, transportation equipment, hazardous materials (along with DPW Environmental Spill Response Team), and directs fire prevention activities. However, partnerships with the surrounding cities and counties are in place to provide assistance should either party need it to respond to an emergency.

The City of Killeen opened a brand new, state-of-the-art police headquarters facility in May 2011. The City of Harker Heights also opened a state-of-the-art facility in April 2007. The local police and fire departments provide fire, police, and emergency services in the area. The surrounding cities, as well as, Bell and Coryell counties provide the fire and emergency services through a combination of city assets and numerous volunteer fire departments.

Medical Services. Fort Hood's on-post medical services are administered by the Carl R Darnall Army Medical Center, as well as several on-post clinics. The clinics serve Active Duty, Family members, and retirees throughout the community. Currently under construction at Fort Hood is a new state-of-the-art medical center that will have all the services provided in a regional medical center. Fort Hood also has a Warrior in Transition Brigade, and brand new supporting facilities to accommodate them. Further, the community supported medical centers include Metroplex Hospital, Scott and White Hospital and clinics, Kings Daughters Hospital and supporting clinics, and a brand new 123 bed hospital owned by Seton enterprises. Medical support provided by the facilities usually accepts Tricare in support of Active Duty military, Family members and retirees. However, they also accept insurance that is normally provided to civilian workers and contractors as well. There is currently both on- and off-post urgent care available.

Family Support Services. Fort Hood's Child, Youth, and School Services is a division of DFMWR. It provides facilities and care for children ages 6 weeks to 5 years; School Age Care for first through fifth graders, and a middle school and teen program, as well as sports, apprenticeships, and instructional classes for children of Active Duty military, DoD civilian, DoD contractor personnel, and retirees (MS/T programs; otherwise based on space availability). In FY 2011, Parent Central Services registered 11,458 households and enrolled 17,593 child or youth programs. There were 24,016 military connected children attending public school in the

Greater Central Texas area. The breakdown of the remaining enrollment was: 407 DoD civilian; 96 DoD contractors; 373 retired military, and 27 private sector civilian Families (working in on-post agencies, e.g., Credit Union, schools). Enrollment, as of December 2011, was 7,025 Families and 11,679 children.

Recreation Facilities. Fort Hood offers its community of Soldiers, Airmen, retirees, DoD employees, and Families several different avenues for recreational entertainment. The military community is encouraged to become active in an Arts and Crafts facility, bingo, two skate parks, an auto crafts shop, eight outdoor swimming pools, an indoor swimming pool, a 48-lane bowling center with automatic scoring displayed on 42-inch flat screen monitors, a 27-hole golf course, an RV travel camp, an outdoor recreation equipment checkout center, nine physical fitness centers spread throughout the post, an ATV course, a paintball course, archery and skeet shooting ranges, swimming, camping, horseback riding, mountain biking and fishing opportunities at Belton Lake Outdoor Recreation Area, intramural and youth sports teams, and a Sportsmen's Center, which is where patrons may purchase hunting and fishing licenses.

4.8.9.2 Environmental Consequences

No Action Alternative

There would be no change or minor impacts anticipated under the No Action Alternative. Under the No Action Alternative, Fort Hood would continue providing a positive economic impact to the surrounding community. No additional impacts to housing, public, and social services, public schools, public safety, or recreational activities are anticipated.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of up to 8,000 military employee (uniformed Soldier and Army civilian employee) positions, each with an average annual income of $41,830. In addition, this alternative would affect an estimated 4,464 spouses and 7,680 dependent children, for a total estimated potential impact to 12,144 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 20,144 military employees and their dependents.

Based on the EIFS analysis, there would be significant socioeconomic impacts for employment and population in the ROI for this alternative. There would be no significant impacts for sales volume or income. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.8-8. Table 4.8-9 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.8-8. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	9.48	6.84	4.01	4.57
Economic Contraction Significance Value	- 8.15	- 7.66	- 3.43	- 1.14
Forecast Value	- 3.10	- 2.90	- 4.49	- 3.15

Table 4.8-9. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- $461,461,900	- $394,378,200	- 8,903 (Direct) - 1,643 (Indirect) - 10,546 (Total)	- 20,144
Percent	- 3.10 (Annual Sales)	- 2.90	- 4.49	- 3.15

The total annual loss in sales volume from direct and indirect sales reductions in the ROI would represent an estimated -3.10 percent change from the current sales volume of $14.88 billion within the ROI. It is estimated that state tax revenues would decrease by approximately $28.81 million as a result of the loss in revenue from sales reductions. Some counties within the ROI supplement the state sales tax of 6.25 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by 2.90 percent. While 8,000 direct Soldier and Army civilian positions would be lost within the ROI, EIFS estimates another 903 contract service jobs would be lost as a direct result of the implementation of Alternative 1, and an additional 1,643 job losses would indirectly occur from a reduction in demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 10,546 non-farm jobs, or a -4.49 percent change in regional employment. The total number of employed non-farm positions in the ROI is estimated to be 235,288. A significant population reduction of 3.15 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 640,000 people (including those residing on Fort Hood) that live within the ROI, 20,144 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes civilian and military employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.8-10 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.8-10. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- $365,808,847 (Local) - $635,544,002 (State)	- $406,640,553	- 9,037 (Direct) - 1,152 (Indirect) - 10,189 (Total)
Percent	- 2.45 (Total Regional)	- 2.99	- 4.33

The total annual loss in sales volume from direct and indirect sales reductions in the region represents an estimated -2.45 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 0.65 percentage points less than projected by

EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately $39.72 million as a result of the loss in revenue from sales reductions, which would be $10.91 million more in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by 2.99 percent, slightly more than the 2.90 percent reduction projected by EIFS. While 8,000 direct military and government Army civilian positions would be lost within the ROI, RECONS estimates another 1,037 direct contract and service jobs would be lost, and an additional 1,152 job losses would occur indirectly from reduction in demand for goods and services in the ROI as a result of force reduction. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 10,189 jobs, or a -4.33 percent change in regional non-farm employment, which would be 0.17 percentage points less than the reduction in employment estimated by the EIFS model.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 1 would lead to a similar net reduction of economic activity within the ROI.

Schools. Alternative 1 would result in the loss of approximately $1,500 to $2,000 per student of federal funding for children no longer enrolled in the district for both the Kileen Independent School District and Copperas Cove Independent School District. There would be fewer resources available for the remaining students as a result of the loss the tax revenue and the federal funds. The school district may, therefore, lose its ability to employ the current number of staff and faculty within the ROI resulting in some secondary job losses. Class size may or may not increase depending on staffing and how the loss of students and Federal Impact Aid were to impact school districts. Some impacts to disadvantaged and low income students could occur as a result of both the decrease in the population and federal funding.

Public Safety. The reduction of up to 8,000 Soldiers and Army civilians would result in a net loss of population to the surrounding communities. Therefore, if Alternative 1 were implemented, reduced employment of existing police, fire, and emergency personnel would likely occur.

Medical Services. The reduction of troops along with their Family members and Army civilians could possibly reduce the medical services within the ROI. Secondary loss of employment in the medical service sector could occur and Army force reduction could make it difficult for area hospitals to recruit, train, and retain quality health care providers.

Family Support Services. The reduction of Soldiers and civilians would make wait times and waiting lists for on-post child care shorter. However, with the overall reduction, it is possible that some of the current program would need to be cut back, which would, in the long run, affect the installation's ability to provide the type of comprehensive child care, child youth services, and recreation opportunity currently available.

Environmental Justice. The African-American population of the ROI is higher than the state average, while the Hispanic population is lower. There would be no disproportionate adverse impact to children, economically disadvantaged populations, or minorities. Job loss due to implementing Alternative 1 would potentially impact all income and economic sectors throughout the ROI. Seen at the state level, the relatively higher African-American populations in the ROI could be seen as meaning that adverse impacts would have a disproportionate impact on those groups.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Economic Impacts. Alternative 2 would result in the increase of up to 3,000 Soldiers, each with an average annual income of $41,830. In addition, this alternative would affect an estimated 1,674 spouses and 2,880 dependent children for a total estimated potential impact to 4,554 dependents. The total population of military employees and their dependents directly affected by Alternative 2 is projected to be 7,554 Soldiers and their dependents.

Based on the EIFS analysis, there would be no significant impacts associated with increased sales volume, income, population, or employment. The range of values that would represent a significant economic impact in accordance with the EIFS model are presented in Table 4.8-11. Table 4.8-12 presents the projected economic impacts to the region for Alternative 2 as assessed by the Army's EIFS model.

Table 4.8-11. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 2

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	9.48	6.84	4.01	4.57
Economic Contraction Significance Value	-8.15	-7.66	-3.43	-1.14
Forecast Value	1.16	1.09	1.68	1.18

Table 4.8-12. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	$173,048,200	$147,891,800	3,339 (Direct) 616 (Indirect) 3,955 (Total)	7,554
Percent	1.16 (Annual Sales)	1.09	1.68	1.18

The total annual gain in sales volume from sales increases in the ROI would represent an estimated 1.16 percent change in total sales volume from the current sales volume of $14.88 billion within the ROI. It is estimated that state tax revenues would increase by approximately $10.81 million as a result of the gain in revenue from sales increases. Some counties within the ROI supplement the state sales tax of 6.25 percent by varying percentages, and these additional local tax revenues would be gained at the county and local level. Regional income would increase by 1.09 percent. While 3,000 Soldiers would be gained within the ROI, EIFS estimates another 339 contract service jobs would be gained as a direct result of the Soldier increases, and an additional 616 jobs would be created indirectly from increases in demand for goods and services in the ROI. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 3,955 jobs, or a 1.68 percent increase in regional non-farm employment. The total number of employed non-farm positions in the ROI is estimated to be approximately 235,288. A population increase of 1.18 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 640,000 people (including those residing on Fort Hood) that live within the ROI, 7,554 military employees and their dependents would be begin to reside in the area following the implementation of

Alternative 2. This would lead to an increase in demand for housing, and decreased housing availability in the region. This would lead to a slight increase in median home values. It should be noted that this estimate of population increase includes Civilian and military employees and their dependents.

Table 4.8-13 shows the total projected economic impacts, based on the RECONS model, that would be projected to occur as a result of the implementation of Alternative 2.

Table 4.8-13. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment
Total	$137,178,317 (Local) $238,329,001 (State)	$152,490,207	3,389 (Direct) 432 (Indirect) 3,821 (Total)
Percent	0.92 (Total Regional)	1.12	1.62

The total annual gain in sales volume from direct and indirect sales increases in the region would represent an estimated 0.92 percent change in total regional sales volume according to the RECONS model, an impact that is 0.24 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would increase by approximately $14.9 million as a result of the gain in revenue from sales reductions, which would be $4.09 million more in additional state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to increase by 1.12 percent, slightly more than the 1.09 percent increase projected by EIFS. While 3,000 Soldiers would be gained directly through the implementation of Alternative 2 within the ROI, RECONS estimates another 389 contract and service jobs would be gained, and an additional 432 jobs would be created indirectly from increases in demand for goods and services in the ROI as a result of force increase. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 3,821 jobs, or a 1.62 percent change in regional employment, which would be 0.08 percentage points less than project under the EIFS model.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 2 would lead to a similar net increase of economic activity within the ROI.

Schools. Alternative 2 would result in a net gain to the population. The impacts to schools in the ROI would be positive. In 2004, when the Army converted to the modular brigade system, an increase of 10,000 troops was analyzed. It was determined at that time that there would be no significant impact on the local schools; and since that time, the districts have added new schools as the population has increased. This alternative would be positive for both the schools and the local economy.

Public Safety. Alternative 2 would result in the increase of up to 3,000 Soldiers, with an actual increase in population of approximately 7,554 people. Local fire and police forces have already planned for the increasing population and the increase would be virtually transparent to these services. The cities and surrounding counties have already built adequate fire stations and have added necessary police services to serve both the cities and counties. Further, the influx of revenue to the area as a result of the population increase would contribute to further expanding these services and would likely have positive impact to high risk areas. These areas

are also typically low-income, and often minority groups live in the areas. The ability to provide more patrol due to increased revenue would actually increase the availability of services.

Medical Services. An increase of up to 3,000 Soldiers, civilians, and their Family members could cause minor, but temporary impacts. The new Regional Medical facility on Fort Hood is scheduled to open in 2015, which would alleviate any difficulties. An increase in the overall population of the area would make it more attractive to health care providers throughout the Nation and it would be easier for all the medical facilities to recruit, train, and retain providers, which would create an environment that facilitates world class health care.

Family Support Services. An overall increase in the number of Soldiers could make wait times and waiting lists longer. However, it would also create more jobs both on post as well as in the local communities. This stimulus for business for child care and recreation services would ultimately create more small business, and employee more workers. Some of the positions would affect low-income employees. The impact as a result of the development of new businesses would likely have a positive impact on low-income wage earners in the community.

Environmental Justice. Under Alternative 2, Fort Hood anticipates no disproportionate adverse impact to minorities, economically disadvantaged populations, or children. The impacts of the anticipated growth of Fort Hood would be felt throughout the ROI and across all populations.

4.8.10 Energy Demand and Generation

4.8.10.1 Affected Environment

Fort Hood's energy needs are currently met by a combination of natural gas and electric power, both of which are provided by private utilities.

Electricity. Electric power is supplied to Fort Hood by Texas Utilities Corporation at four existing substations. The usage of these three substations is presently 60 percent of capacity. Fort Hood used an average of 1.2 million British Thermal Units (MMBtu) of electricity over the past 3 years. Construction is complete on a new substation on the west side of the cantonment area that services West Fort Hood. Further, an expansion of the substation at North Fort Hood to increase the capacity and support facilities currently under construction is in progress. These four substations would provide an electric capacity of 248 MW average. Fort Hood's electricity capacity is sufficient to handle an infrastructure to support additional Soldiers for the next 20 years.

Natural Gas. Natural gas is provided by a private energy company and is distributed throughout the post via installation distribution lines running from three metered stations. Fort Hood has, over the past 3 years, consumed an average of 1.0 MMBtu of fossil fuels per year.

4.8.10.2 Environmental Consequences

No Action Alternative

The No Action Alternative would result in negligible energy demand and generation effects. Fort Hood's ranges and cantonment areas would continue to consume the same types and amounts of energy. Maintenance of existing utility systems would continue.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have minor beneficial overall impacts to energy demand. There would be less of a requirement for energy and less on-post usage of energy. Fort Hood would be able to dispose of some relocatable and older, more energy-inefficient buildings. Fort Hood would

continue to search for innovative ways to conserve energy as result of the implementation of this alternative.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Growth of up to 3,000 Soldiers is anticipated to have a minor impact resulting from energy demand and generation. Fort Hood's existing energy infrastructure has sufficient excess capacity, diversity, and scalability to readily absorb growth in Soldier and associated dependents at this level.

4.8.11 Traffic and Transportation

4.8.11.1 Affected Environment

Fort Hood is located in Central Texas, about 45 miles south-southwest of Waco, Texas, and approximately 55 miles north of Austin, Texas. The ROI for traffic and transportation aspects of the Proposed Action include Fort Hood, and immediately surrounding area consisting of Bell and Coryell counties. Towns included with the ROI include Killeen, Copperas Cove, Harker Heights, Nolanville, and Temple. Major road routes in the area include I-35, and U.S. Highway 190. I-35 is a north-south interstate highway about 20 miles east of Fort Hood, accessed by U.S. Route 190.

4.8.11.2 Environmental Consequences

No Action Alternative

Negligible impacts are anticipated under the No Action Alternative. Currently, the Fort Hood transportation system adequately supports the needs of the Fort Hood community.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have minor beneficial traffic impacts resulting from a reduction in force at Fort Hood. It is anticipated that traffic congestion would be diminished slightly and travel time would decrease through the installations main access points. The roads would continue to be maintained and LOS for on- and off-post commuters would improve marginally as traffic volume decreased.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Alternative 2 would have minor short and long-term impacts on traffic and transportation systems on the installation due to the presence of up to an additional 3,000 Soldiers and their Families. The increase in off-post traffic would have a minor impact on traffic in the community overall given that a large percentage of the unit's married population, and unmarried Soldiers in the grade of E-6 (Staff Sergeant) and higher, would likely reside in off-post housing distributed widely across the region. The increase in traffic would have a negligible impact on the overall traffic congestion in the neighboring communities. This increase in population would have a minor impact on the traffic volume on the installation, and could cause a minor decrease in LOS on some of the installation's arterial routes.

4.8.12 Cumulative Effects

The following is a list of major projects that are either recently completed, undergoing construction, or are planned for the near future. Although all of the projects may not specifically impact, or be impacted by, the Proposed Action, they are important to note due to their size or impact on Fort Hood.

- ***Residential Communities Initiative Program.*** In 2001, Fort Hood transferred operational management of its on-post Family housing to a private sector developer. The transaction has led to demolition, renovation, and construction to provide an end state inventory of more than 6,430 Family housing units. This project, along with the Proposed Action, increases the amount of construction and demolition debris deposited into the landfill. Further, because most finger drainages in the area eventually empty into Belton Lake, both projects would likely increase the amount of sedimentation that enters the lake. Use of BMPs should decrease sedimentation and prevent any hazardous materials from ending up in Belton Lake.
- ***Privatization of Army Lodging.*** The PAL program is a new initiative, started in 2006, which will allow a private developer to lease land on the installation to construct privatized, short-term and long-term lodging. Several areas have been identified by Fort Hood Master Planning and PAL developers, and the leasing actions are underway. PAL will increase construction, which will increase sedimentation, landfill debris, and possibly hazardous materials. Waters of the U.S. and cultural resources should not be impacted as a result of PAL, due to the use of delineations and existing installation data prior to finalizations of construction plans.
- ***Texas A&M University Campus.*** Legislation in Congress authorized Fort Hood's transfer of approximately 672 acres to the Texas A&M University System for development of a campus to serve roughly 20,000 students. The essentially undeveloped land in the southeastern portion of West Fort Hood, in Training Area 74, is located around State Highway 195, southeast of Robert Gray Army Airfield. The transfer will increase the population around Fort Hood, and likely add to the overall tax base in both Bell and Coryell counties.
- ***Tank Trail Maintenance.*** Fort Hood has over 400 miles of tank trails. Range Control, partnering with the Maintenance Division, has begun a tank trail maintenance program on Fort Hood. The purpose of the program is to both repair damaged trails as well as maintain trails in good condition. The tank trail maintenance program is anticipated to promote Soldier safety and training ability while reducing the amount of sedimentation and runoff due to poorly maintained trails.
- ***10-Year Range Development Plan Projects.*** Fort Hood proposes to construct or modify 18 ranges and their associated supporting facilities within the restricted live-fire area of Fort Hood, Texas. Under the Proposed Action, all 18 ranges would be constructed or modified to fit the Army's emerging doctrinal training standards. Some construction on these ranges has already begun. The newly upgraded and constructed ranges would provide better training to all Soldiers on Fort Hood. The construction could cause increased erosion and decreased water and air quality. Those impacts are anticipated to be short term and insignificant, due to the fact that these impacts should conclude with the conclusion of construction on the ranges.
- ***Western Maneuver Corridor Maintenance.*** Fort Hood proposes to conduct widespread (approximately 67,000 acres) “woody species management” (in the form of tree and brush removal, including some hardwoods) maintenance of the western maneuver training corridor. Estimates for juniper and mesquite removal are 6,700 and 5,392 acres, respectively. The combined number is equal to 18 percent of the entire western maneuver area that encompasses 67,000 acres. It is unknown how many or what kind of hardwood vegetation removal would occur. The estimates for mesquite and juniper represent the bulk of the vegetation that would be removed. Vegetation removal would only be conducted to ensure the proper spacing (40 feet by 14 feet) between clusters of trees and only in the established visible training lanes. The estimated

timeframe for implementation of the proposed project is approximately 10 years, and is subject to available funding.

- ***North Fort Hood Development Plan.*** Fort Hood is the installation of choice to support annual training and mobilizations for many of the National Guard and Army Reserve components. Because most mobilizations and demobilizations occur at North Fort Hood, plans are underway to improve the ability to maximize the effectiveness of the deployment process and training requirements. Current plans include the construction of an Operation Readiness Training Complex (Forward Operating Base) at North Fort Hood. One set will be completed each year beginning in FY 2007, for a total of six sets. Each set includes two barracks, one Non-Commissioned Officer and officers quarters, one battalion building, one company operations building, one maintenance facility, one dining facility, and four workshop buildings.

  Additional facilities to be constructed at North Fort Hood include a fire station, a Troop Medical Clinic, a physical fitness center, new chapels, an AAFES shoppette, and an automatic rapid fire range.

  The North Fort Hood Development Plan would change the infrastructure and use of North Fort Hood, as well as increase training capabilities and joint and combined training. Using BMPs would minimize the effects of heavy construction activities at both North Fort Hood and in the live-fire area.

- ***Division West Aviation Assets.*** In FY 2010, the Division West Army Reserve aviation assets were relocated to Fort Hood from Fort Sill, Oklahoma. During the same timeframe, the 4th Infantry Division aviation assets were relocated to Fort Carson, Colorado. Therefore, these new assets do not represent an increase in aircraft to the installation. Further, they are rotary wing assets and do not use any of the Proposed Action SUA, so there are no anticipated impacts are anticipated on the Proposed Action.

- ***AAFES Post Exchange New Facility.*** Fort Hood and AAFES propose to construct and operate a 244,000 square foot Post Exchange shopping facility on Fort Hood for use by authorized individuals. The shopping center would contain a main store, merchandise processing area, concessions, Medcom Satellite Pharmacy, a dental clinic, and a food court including nine food concepts: Burger King, Manchu Wok, Del Taco, Charley's, Starbucks, Baskin Robbins, Froots, Arby's, and Subway. Fort Hood would be responsible for conducting the demolition of an existing Defense Reutilization and Marketing Office (DRMO) Tire Barn facility and associated parking lot. Construction of the Proposed Action would entail relocation, to the new shopping center, of services currently offered in Building 330 (the dental clinic).

  The proposed facilities would connect to existing utility services and communications systems and would provide for pavement, sidewalks, curbs, gutters, storm drainage, retention walls, and other site improvements, as necessary. AAFES anticipates that construction of the new shopping center would last approximately 17.5 months, and construction is anticipated to begin in May 2012. Once the new shopping center is operational, AAFES would transfer Buildings 50004 (the existing Post Exchange) back to Fort Hood for final disposition.

- ***Robert Gray Army Airfield - Joint Use.*** In August 2004, Fort Hood's Robert Gray Army Airfield entered into joint use service with the City of Killeen. Robert Gray Army Airfield joint use has increased fixed wing aircraft use and has subsequently increased Fort Hood's airspace traffic. Although this increase does not affect the fixed wing airspace use, it is important to note nonetheless. Robert Gray Army Airfield is further expanding parking lots and adding additional runway components and infrastructure.

The joint use section of Robert Gray Army Airfield; however, does not drain towards Belton Lake.

- ***Robert Gray Army Airfield – Proposed Second Runway.*** In August 2004, Fort Hood's Robert Gray Army Airfield entered into joint use service with the City of Killeen. Currently, a second 10,000 foot runway is proposed at the Robert Gray joint use facility. This project is in the early planning stages. It is important to note this project because it is anticipated to increase air traffic substantially. Since the project is in the early planning stages, the effects are unknown. Subsequent environmental documentation and analysis will occur as the project progresses.
- ***Proposed Assault Landing Strip West Fort Hood.*** Fort Hood is currently in the proposal process to construct an assault landing strip at West Fort Hood. The landing strip would provide Soldiers with a realistic scenario that would serve as a training exercise for the creation of landing strips in combat areas. Fort Hood provides the unique terrain and surroundings that are similar to many areas where combat operations currently occur. By building the assault strip at this location, Soldiers would be able to train to standard; therefore, increasing their ability to become combat ready. Subsequent proposed use of the landing strip is for UAS; however, that use has not yet been determined. Subsequent environmental documentation and analysis will be conducted as this project progresses.

  The proposed assault landing strip is compatible with the surrounding communities. Current land use in the LUPZ is currently undeveloped or agricultural. Current land use in NZ II is primarily undeveloped or agricultural with scattered residences.
- ***Unmanned Aerial Systems.*** Fort Hood is currently planning for the arrival of the Predator, Reaper, and Gray Eagle UAS. These aircraft will not change use of the current Special Use MOA. Current land use and noise levels will not change as a result of these aircraft; therefore, negligible cumulative impacts are anticipated.
- ***Proposed Texas Department of Transportation Widening of Highway 190.*** Texas Department of Transportation is currently planning to widen U.S. Highway 190 from Spur 172 (slightly west of Clear Creek Road) to Farm to Market Road 2410. Construction is set to begin late spring or early summer of 2012. A slight increase in traffic delays is anticipated as a result of this project; however, the impact to traffic and transportation as a result of this project is anticipated to be short term and minor (TXDoT, 2011), ultimately improving the traffic and transportation for both Fort Hood and the City of Killeen.

In conjunction with the anticipated cumulative environmental effects listed for each project listed above, each project increases Fort Hood's capacity to perform its mission by providing for the infrastructure necessary for growth. Although there are plans for various construction activities, the use of BMPs and promotion of the programs aimed at reducing sedimentation create a balance to sustaining the environment on Fort Hood. The projects listed above, in conjunction with the Proposed Action, are not anticipated to have any significant effect on the environment. With regard to socioeconomics, significant cumulative regional impacts would be anticipated with regards to regional employment and population. With a reduction of military and civilian personnel, the regional economy may contract in a manner that disproportionately impacts low-income populations. The skilled and educated labor force of central Texas only accounts for about 20 percent of the population. Unskilled low-income earners represent 80 percent of the region's workers, and many of these positions support sales and service industry that support the military (Combs, 2012).

The implementation of Alternative 1 in conjunction with the widening of Highway 190 would be anticipated to result in moderate beneficial cumulative impacts to traffic in the ROI. This project would also lessen the minor impacts to traffic likely to be experienced as a result of Alternative 2, were Fort Hood to experience a net gain of up to 3,000 additional Soldiers.

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4.9 FORT IRWIN, CALIFORNIA & THE NATIONAL TRAINING CENTER

4.9.1 Introduction

Fort Irwin, located in south-central California, consists of approximately 640,000 acres of Army owned lands. A majority of these lands are maneuver area suited for mechanized armor and dismounted military training (Figure 4.9-1). In 1981, Fort Irwin was designated as the National Training Center (NTC), the Army's premier combat training center. Since this time, Fort Irwin has supported large-scale Brigade maneuver exercises along with other unit training exercises.

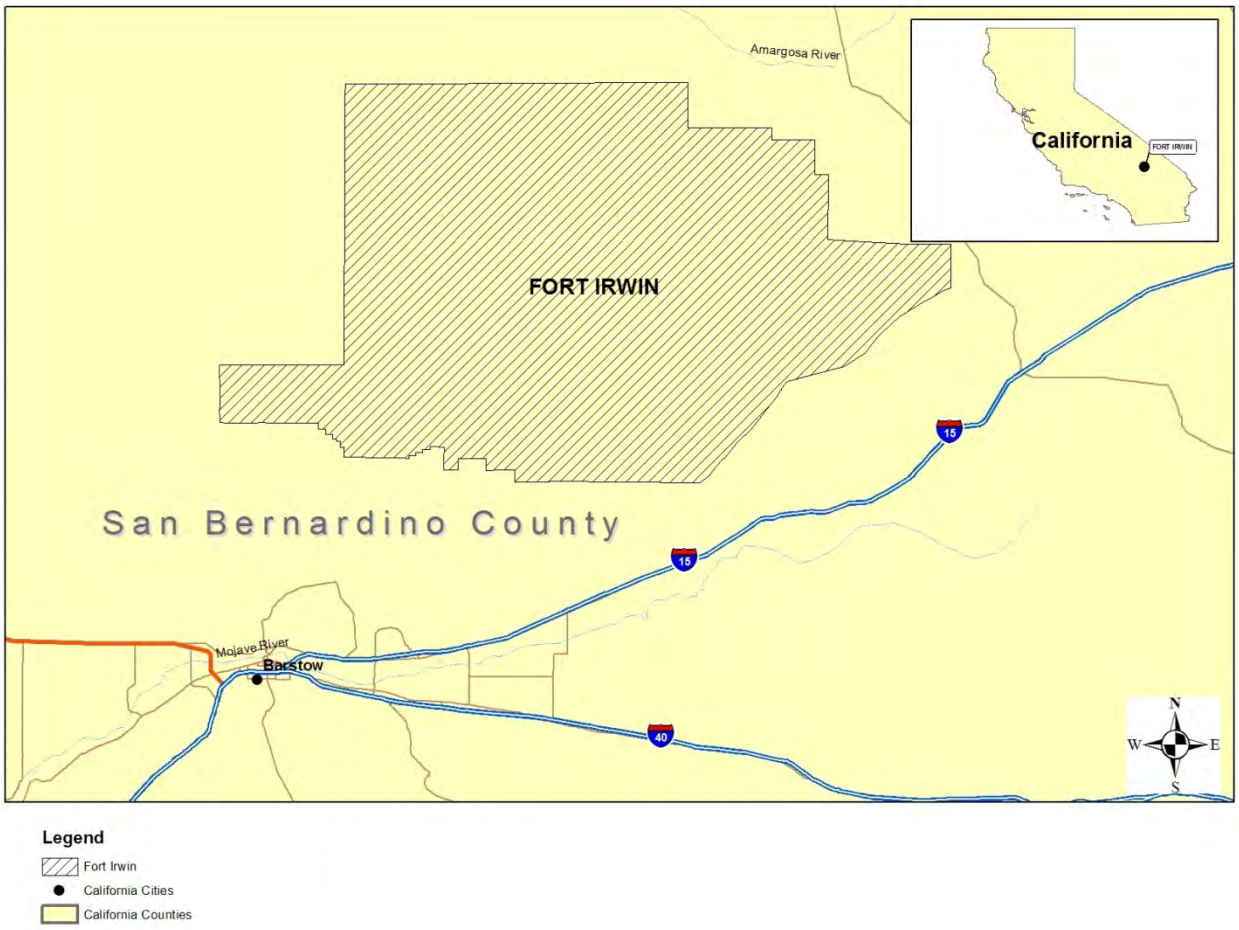


Figure 4.9-1. Fort Irwin

Fort Irwin's main unit is the 11th Armored Cavalry Regiment (ACR), which supports the NTC's primary mission of training Army units on a rotational basis. The 11th ACR acts as an opposing force to Army units training at the NTC during Army maneuver training exercises.

Fort Irwin provides an austere and rugged training environment that includes desert and mountainous terrain. Fort Irwin possesses range infrastructure to ensure that units can conduct live-fire weapons qualifications and CALFEX in designated areas. The primary purpose of the NTC is to provide the Army with a large force-on-force maneuver area to support the training readiness of units across the Army.

Fort Irwin is located approximately 37 miles northeast of Barstow, California in the High Mojave Desert midway between Las Vegas, Nevada and Los Angeles, California. The installation is

surrounded by desert hills and mountains. Natural vegetation is sparse and consists of mesquite, creosote, yucca, and other desert plants.

The entire reservation encompasses more than 1,100 square miles, comprised mostly of arid basins, dry lakebeds, ridges, and mountain ranges. The northern boundary of the training area is less than 2 miles from Death Valley National Monument. The San Bernardino and San Gabriel Mountains extend in an east-west path approximately 85 miles southwest of Bicycle Lake. The Sierra Nevada Mountains, oriented north to south, are to the west.

4.9.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Irwin does not anticipate any significant adverse environmental or socioeconomic impacts as a result of the implementation of Alternative 1 (Force reduction of approximately 2,400 Soldiers and Army Civilians). Table 4.9-1 summarizes the anticipated impacts to VECs from the No Action Alternative and Alternative 1. As Fort Irwin is not currently the stationing site for one of the Army's Active Component BCTs, it is not being considered for a potential increase or gain in forces from BCT restructuring.

Table 4.9-1. Fort Irwin Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 2,400
Air Quality	Minor	Beneficial
Airspace	Minor	Beneficial
Cultural Resources	Minor	Beneficial
Noise	Negligible	Negligible
Soil Erosion	Minor	Beneficial
Biological Resources	Minor	Beneficial
Wetlands	Negligible	Negligible
Water Resources	Less than Significant	Beneficial
Facilities	Minor	Minor
Socioeconomics	Minor	Less than Significant
Energy Demand and Generation	Negligible	Beneficial
Land Use Conflict and Compatibility	Minor	Minor
Hazardous Materials and Hazardous Waste	Minor	Minor
Traffic and Transportation	Minor	Beneficial

4.9.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section below, no more than a beneficial or negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- ***Wetlands.*** Fort Irwin contains very few wetlands areas. Wetlands at the NTC and Fort Irwin are confined to 10 springs that are essential to the survival and well being of a number of wildlife species. These areas are marked and fenced as off-limits. NTC regulation 350-3 states that "No vehicle or foot traffic is authorized around springs or vegetation within the spring's area" (Fort Irwin, 2006).

  No adverse impacts to installation wetlands are anticipated under the No Action Alternative or the reduction of approximately 2,400 Soldiers and civilians at Fort Irwin. Training activities would be off-limits in and around designated wetlands areas. Wetland management as addressed in the installation INRMP which discusses management of the installations few wetlands areas.

- ***Noise.*** Fort Irwin is home to the NTC, where brigade-size units are able to train in simulated rigorous combat conditions using weapons simulators and live fire. The range areas support air-to-ground gunnery and firing, artillery, air maneuver, and ground maneuver, including armored vehicle training. Sensitive noise receptors, such as off-post civilian populations and communities, are relatively far removed from main engagement areas where noise impacts are generated. Some air maneuver does take place in NZs that extend off the installation boundary, but operations close to the periphery of the installation are generally minimal. Artillery and other large caliber fire take place in NZs that do not extend beyond the installation border. Frequent low frequency noise impacts are generated by aircraft and low-altitude rotary wing aircraft flights.

  The area surrounding Fort Irwin is generally characterized as desert and mountainous terrain. The nearest noise-sensitive receptors within 10 miles of the installation include a 1,103 Family housing unit, a school, a religious facility, and a hospital. There are also 150 residents within 1-7 miles of the Fort Irwin. Sensitive wildlife that may be impacted by noise generated at Fort Irwin include ground squirrel, bats, raptors, the Desert Tortoise, and the Bighorn Sheep (Fort Irwin, 2005).

  Under the No Action Alternative and Alternative 1, negligible adverse noise impacts to nearby residential areas and to wildlife are anticipated. The noise associated from a reduction would be only slightly lower than current noise levels resulting from a slight overall decrease in usage of small arms ranges and maneuver areas as a result of the implementation of Alternative 1. Any impacts to wildlife would be short term and would not be significant. The noise generated by small arms fire or artillery live fire does not travel off the installation and there are negligible impacts to nearby residential areas. Noise levels would not exceed current peak noise levels and may have only low long-term impacts to off-post residents. Noise contours would not change, and guidelines for noise mitigation procedures protecting biological receptors as defined in the installation's INRMP or ESMP would be followed. The INRMP would be reviewed or updated to ensure current management procedures are followed. There are no significant impacts from noise currently at Fort Irwin and impacts from noise would decrease negligibly with the implementation of Alternative 1.

- ***Utilities***. Utilities are generally connected across the cantonment area and along defined utility corridors. The ROI for this resource is the cantonment area of Fort Irwin and the various utility ROWs that connect Fort Irwin with the regional systems.

Electric power is provided by Southern California Edison and is distributed via overhead lines to Fort Irwin and the surrounding communities. While there is a transcontinental natural gas transmission pipeline that runs along its boundary, Fort Irwin itself does not utilize natural gas as a source of energy.

The No Action Alternative would result in negligible energy demand and generation effects. Fort Irwin ranges would continue to consume the same types and amounts of energy. Maintenance of existing utility systems would continue. Fort Irwin would continue to pursue energy efficiency initiatives and renewable energy goals and legislative mandates. Long-term beneficial impacts are anticipated from reduction of approximately 2,400 Soldiers and Army civilians at Fort Irwin. Alternative 1 would result in reduced energy demand that is comfortably within the capacity of the existing energy utility. There would be less of a requirement for energy and less on-post usage of energy. Fort Irwin would continue to search for innovative ways to conserve energy and reduce its overall demand, as a result of the implementation of Alternative 1.

Fort Irwin anticipates that the implementation of either of the alternatives would result in negligible impacts discussed above. The following provides a discussion of the VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Proposed Action alternatives.

4.9.2 Air Quality

4.9.2.1 Affected Environment

The ROI is in the high desert, which includes Fort Irwin and the Los Angeles Air Basin. The ROI is in nonattainment for O_3, according to the state standards, as well as for the federal 1-hour standard below the Universal Transverse Mercator 90 gridline. The ROI is in attainment for both the state and federal CO standards, as well as for sulfates, and unclassified for hydrogen sulfide (H_2S) at the state and federal levels. The ROI is in nonattainment for both the state and federal PM_{10} standards.

4.9.2.2 Environmental Consequences

No Action Alternative

A long-term minor adverse impact is anticipated to air quality from the maintenance of current troop strength. It is assumed that the resulting increases in air emissions are directly proportional to the population at the facility. In general, combustion and fugitive dust emissions would produce localized, short-term elevated air pollutant concentrations that would likely not result in any sustained impacts on regional air quality.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

A long-term beneficial impact to air quality is anticipated in the regional airshed as a result of implementing Alternative 1. Any construction related emissions from facilities demolition have the potential to produce localized, short-term elevated air pollutant concentrations, but these are not anticipated to have a major effect on regional air quality. Combustion emissions resulting from training from mobile sources would be projected to reduce marginally, though most of the emissions from large unit maneuver exercises at Fort Irwin would continue. Fugitive dust emissions would decrease slightly but would remain a localized issue. The installation would continue to take measures to address opacity issue if training activities are close enough to installation boundaries that visible fugitive dust emissions leave the installation boundary. Given the wide distribution of emissions, with a reduction in Soldier and Army civilian population it is not anticipated that regional air quality would be significantly affected. Minor long-term beneficial

impacts are anticipated to air quality stemming from a reduction air pollutant emissions from lower levels of training, POV traffic, and reduced usage of existing stationary air emissions sources. Emissions from heavy construction equipment and trucks conducting facilities demolition would include NO_x, PM_{10}, CO, sulfur oxides (SO_x), and VOCs; however, the amounts would be dependent on factors such as hours of operation and miles traveled. The short-term impacts of increased emissions from construction equipment associated with higher levels of facility demolition would not have a significant impact on regional air quality.

4.9.3 Airspace

4.9.3.1 Affected Environment

Fort Irwin has 955 square miles of FAA-designated SUA, with no limit in altitude. The installation has access to this airspace continuously, and is controlled by the FAA operating out of Edwards, California (USACE, 2002).

4.9.3.2 Environmental Consequences

No Action Alternative

Fort Irwin would continue to support large scale NTC maneuver training rotations and live-activity at the same intensity; therefore, impacts to airspace would be negligible under the No Action Alternative.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

Minor beneficial impact to airspace is anticipated from a slight reduction in live-fire operations at Fort Irwin. It is anticipated that the activities associated with a decrease of approximately 2,400 Soldiers and civilians would decrease live-fire activities in training range areas. At Fort Irwin, a majority of activities requiring airspace (artillery operations, helicopter training, UAS, live-fire activities) would continue in support of large-scale NTC maneuver training rotations. Use of this airspace would continue to be managed through scheduling and balancing training requirements with airspace availability.

4.9.4 Cultural Resources

4.9.4.1 Affected Environment

The affected environment for Fort Irwin, relating to cultural resources, is the installation footprint. Fort Irwin's landscape contains numerous prehistoric and historic archaeological sites and artifacts and areas of possible interest to Native American communities and other groups. The post, first established in the 1940's has one listed structure in the Goldstone area of the installation, which is leased by National Aeronautics and Space Administration (NASA). This historic structure, the Pioneer Antenna was the first of over 10 antennas at Goldstone, which tracked the Mars Rovers, Hubble, Voyager, and over 30 other satellites in deep space. Cultural resources are managed by Fort Irwin cultural resource specialists under the direction of the installation CRM. Fort Irwin possesses its own curation facility to preserve, document and record archaeological findings. The curation facility is located on the installation.

4.9.4.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, long-term minor impacts are anticipated on cultural resources. Due training restrictions placed around sensitive potentially eligible cultural resource sites (sites identified and managed as potentially eligible for listing on the National Historic Register), maneuver training at the NTC is not likely to cause significant impacts to cultural resources at

Fort Irwin. Ongoing management and monitoring is required to ensure cultural resource compliance and minimize disturbance and loss of cultural resources from heavy tracked vehicle maneuver training. Additionally, Soldiers are provided with instruction prior to maneuver training rotations to ensure they are aware not to inadvertently disturb surface archaeological sites or potentially significant cultural resources.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

Long-term minor beneficial impacts are anticipated on Fort Irwin in conjunction with a decrease of approximately 2,400 Soldiers and civilians. A lower number of Soldiers and reduced amounts of equipment used in the maneuver areas would reduce potential impacts to cultural resources at Fort Irwin. Any facilities reduction or demolition as a result of this action would not impact historic structures.

4.9.5 Soil Erosion

4.9.5.1 Affected Environment

Fort Irwin is located in the Central Mojave Desert and is characterized by high mountain peaks and ridges separated by broad alluvial fans and wide valleys. Large basins without external drainage develop playas (very flat, dry lake beds). The average elevation is approximately 2,500 feet, with peaks up to 6,150 feet.

Fort Irwin's desert soils are fragile and vulnerable to disruption from wind and water erosion. These soils are also highly vulnerable to compaction. Hardened crusts can form on clay or silty loam soils as a result of biological activity. This stabilizes the soil surface integrity and resists erosion. "Desert pavement" surfaces consist of pebbles and rocks that protect the desert soils from erosion. Vehicle traffic can disrupt both the crusts and pavement and lead to exposed soils and increased rates of erosion.

4.9.5.2 Environmental Consequences

No Action Alternative

Long-term minor adverse impacts from the wheeled and tracked vehicles would continue to occur in association with maneuver activities. Off-road movement of tracked and wheeled vehicles would disturb vegetation and soil surfaces, leading to increased levels of soil erosion.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

As a result of the implementation of Alternative 1, minor beneficial impacts are anticipated. Impacts to soils and increased rates of erosion would continue as a result of the maneuver training activities associated with the NTC mission. These impacts, however, would be anticipated to be marginally reduced in comparison to the No Action Alternative. The terrain would continue to be impacted by rutting and soil disturbance from vehicle maneuvers, turns, and digging, mostly as a result of the NTC's maneuver training activities. These maneuver disturbance areas could then be prone to wind and water erosion. The implementation of Alternative 1 is not anticipated to change the frequency, intensity, or duration of NTC maneuver training, and therefore a bulk of the impacts to soils at Fort Irwin would continue to be realized. However, off-road traffic and maneuvers would decrease slightly with a force reduction of up to 2,400 Soldiers and civilians, which could have a minor positive impact on vegetation and the soils.

4.9.6 Biological Resources (Vegetation and Wildlife, Threatened and Endangered Species)

4.9.6.1 Affected Environment

There are approximately 45 special status species of flora and fauna that occur or may occur on Fort Irwin; however, Fort Irwin currently records only two ESA listed species as occurring on the installation. The installation's federally-listed species include the Desert Tortoise and the Lane Mountain Milk Vetch. Habitat that could support other federally-listed species in the area, such as the Least Bell's Vireo, and the Southwestern Willow Flycatcher, is not known to occur in the potentially affected ROI. Species of Concern include those listed in Table 4.9-2.

Table 4.9-2. Special-Status Species

Common Name	Scientific Name	Status
Flora		
Lane Mountain milkvetch	(*Astragalus jaegerianus*)	Federally Protected
Alkali mariposa lily	(*Calochortus striatus*)	California Listed or Species of Special Concern
Clokey's cryptantha	(*Cryptantha clokeyii*)	California Listed or Species of Special Concern
Small-flowered androstephium	(*Androstephium breviflorum*)	California Listed or Species of Special Concern
Desert cymopterus	(*Cymopterus deserticola*)	California Listed or Species of Special Concern
Barstow woolly sunflower	(*Eriophyllum mohavense*)	California Listed or Species of Special Concern
Mojave monkeyflower	(*Mimulus mohavensis*)	California Listed or Species of Special Concern
Birds		
Bendire's thrasher	(*Toxostoma bendirei*)	California Listed or Species of Special Concern
Black tern	(*Chlidonias niger*)	California Listed or Species of Special Concern
Burrowing owl	(*Speotyto cunicularia*)	California Listed or Species of Special Concern
California Black Rail	(*Laterallus jamaicensis coturniculus*).	California Listed or Species of Special Concern
California gull	(*Larus californicus*)	California Listed or Species of Special Concern
Cooper's hawk	(*Accipiter cooperii*)	California Listed or Species of Special Concern
Crissal thrasher	(*Toxostoma crissale*)	California Listed or Species of Special Concern
Ferruginous hawk	(*Buteo Regalis*)	California Listed or Species of Special Concern
Golden eagles	(*Aguila chrysaetos*),	California Listed or Species of Special Concern, Federally Protected

Table 4.9-2. Special-Status Species (Continued)

Common Name	Scientific Name	Status
Gray vireo	(*Vireo vicinior*)	California Listed or Species of Special Concern
Least Bell's Vireo	(*Vireo bellii pusillus*)	Federally Protected
Le Conte's thrasher	(*Toxostoma lecontei*)	California Listed or Species of Special Concern
Loggerhead shrike	(*Lanius ludovicianus*)	California Listed or Species of Special Concern
Long-eared owl	(*Asio otus*)	California Listed or Species of Special Concern
Northern harrier	(*Circus cyaneus*)	California Listed or Species of Special Concern
Sharp-shinned hawk	(*Accipiter striatus*)	California Listed or Species of Special Concern
Southwestern Willow Flycatcher	*(Empidonax traillii extimus)*	Federally Protected
Swainson's Hawk	(*Buteo swainsoni*)	California Listed or Species of Special Concern
Vaux's swift	(*Chaetura vauxi*)	California Listed or Species of Special Concern
Vermillion flycatcher	(*Pyrocephalus rubinus*)	California Listed or Species of Special Concern
Virginia's warbler	(*Oreothlypis virginiae*)	California Listed or Species of Special Concern
White-faced ibis	(*Plegadis chihi*)	California Listed or Species of Special Concern
Peregrine Falcon	(*Falco peregrinus anatum*)	California Listed or Species of Special Concern
Reptiles		
Desert Tortoise	(*Gopherus agassizii*)	California Listed or Species of Special Concern, Federally Protected
Mammals		
Mohave Ground Squirrel	(*Spermophilus mohavensis*).	California Listed or Species of Special Concern

4.9.6.2 Environmental Consequences

No Action Alternative

Long-term minor adverse impacts are anticipated on listed or other species recorded on the installation. Listed species and species at risk recorded on the installation would continue to be managed in accordance with the installation's INRMP and ESMP, terms and conditions identified within biological opinion(s) issued by the USFWS and any conservation measures identified in ESA, Section 7 consultation documents.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

Minor beneficial impacts to biological resources as a result of the implementation of Alternative 1 are anticipated. Scheduling conflicts for training area access to conduct resource monitoring would be slightly reduced. Proactive conservation management practices would be more easily accomplished and the likelihood of wildlife and vegetation disturbance would be slightly reduced with a minor reduction in maneuvers and live-fire activities. A majority of maneuvers at Fort Irwin would continue to occur in support of NTC training rotations and to support the training of non-resident units from across the Army.

4.9.7 Water Resources

4.9.7.1 Affected Environment

Surface Water. Surface water resources within Fort Irwin and its surrounding vicinity are scarce. Surface water in shallow ephemeral lakes is usually lost through groundwater percolation or evaporation. The only naturally occurring permanent surface water resources on the NTC and Fort Irwin are six springs and one watershed that produce small quantities of surface water.

Groundwater. Bicycle, Irwin, and Langford groundwater basins are used to supply current water needs of the NTC and Fort Irwin. Fort Irwin is exploring the existence of other groundwater resources.

Total dissolved solids are a growing concern of the NTC. The total dissolved solids in the soil near the WWTP are being leached through the soil to the water table in the Irwin Basin, where the NTC and Fort Irwin draws its water.

Water Rights. Fort Irwin has water rights to water on property owned by Fort Irwin; any potential use of percolating groundwater would be limited to use by the Army. In the case of insufficient water supply, the available supply is equally appropriated among owners of overlying lands. Surplus water, which may be withdrawn without creating an overdraft on groundwater supply, may be appropriated for use on overlying lands. The Army has purchased two sections of land for water rights in Coyote Basin. This land could be developed as a groundwater resource for the NTC, if required.

Water Supply and Demand. The NTC and Fort Irwin consumes an average of 2.3 mgd (based on 2010 data). About 60,000 gpd of this demand are used outside the cantonment area for field activities involving Soldier maneuvers.

An approved water supply project involves development of one new production well in Langford Basin to meet anticipated future water demands. The NTC has recently completed two wells downrange to provide water for non-potable use. Coyote Basin is believed to contain substantial groundwater resources. Although the NTC and Fort Irwin has withdrawn two public land sections overlying Coyote Basin groundwater resources for water production purposes, it currently does not draw from Coyote Basin and is not likely to initiate immediate use of this basin. The need for future water development may be delayed by water conservation measures that reduce demand within the cantonment area and extend the production life of Bicycle, Langford, and Irwin aquifers. The installation's water system has recently been privatized.

Wastewater. The NTC and Fort Irwin WWTP have recently been privatized. It is permitted as a zero discharge system; therefore, no discharge to surface watercourses occurs except in the case of severe rainfall events.

Stormwater. Stormwater is an important facet of environmental management at Fort Irwin as significant rainfall events can generate enough stormwater to exceed the treatment capacity of

the WWTP. The installation requires the development of Stormwater Pollution Protection Plans for all construction activities to assist in management of stormwater and to control the impacts of stormwater pollution and erosion.

4.9.7.2 Environmental Consequences

No Action Alternative

Less than significant adverse impacts to water demand are anticipated with the maintenance of current Soldier and civilian strength at Fort Irwin. Personnel consumption and washing of vehicles would continue to require water demand and associated treatment at current levels. Motorpool activities and washing of heavy-tracked vehicles would continue to produce an increased water demand and associated treatment requirements; however, the installation water supply would not be significantly impacted. Fort Irwin is investing in water, wastewater, and water-related infrastructure to manage its water demand requirements to ensure long-term water availability.

Any new construction and land disturbance over 1 acre would require a stormwater construction permit that would entail identification and implementation of mitigation strategies to reduce impacts associated with stormwater runoff during and after construction.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

Minor beneficial impacts are anticipated with the reduction of up to 2,400 Soldiers and their Families at Fort Irwin. The reduction of military personnel would reduce water demand, wastewater generation, and the associated water treatment requirements. The implementation of force reduction would extend time horizons of water availability of water being drawn from Fort Irwin's current well's and water supply. Fort Irwin would continue to manage its water demand requirements and investigate ways to ensure long-term water availability, however.

4.9.8 Facilities

4.9.8.1 Affected Environment

The main cantonment area is the urbanized portion of Fort Irwin, and has been developed into a wide variety of land uses that comprise the elements necessary to support the military community that resides and works there. The cantonment area includes the installation Post Exchange, commissary, housing and Family support services, medical, and mission-support facilities. The environmental impacts for utilities, energy, and traffic and transportation are addressed in separate sections of this PEA.

4.9.8.2 Environmental Consequences

No Action Alternative

Short- and long-term minor adverse impacts to facilities resources are anticipated. Activities within the training and range areas would be limited to existing firing ranges, maneuver areas, roads and trails. Currently, Fort Irwin has the developed area in the cantonment area, as well as the training space to support its operations. Because the installation landfill is running at near capacity, long-term minor adverse impacts to the landfill are anticipated as a result of continued operations. A program to transport solid waste to facilities in Barstow may be developed if new landfill cells are not permitted for operation.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

Short- and long-term minor impacts to facilities resources are anticipated with the reduction of 2,400 Soldiers, Army civilians, and their Families. The reduction would decrease usage within

the cantonment and training areas and decrease the need for some facilities. Additional coordination and a review of the installation Real Property Master Plan would be conducted in conjunction with strength reduction. Older, less efficient facilities nearing the end of their life-cycle would be demolished when no longer needed to support Soldiers or their Families to save the Army on maintenance and energy requirements. Some facilities would be preserved in a maintenance status for future use. Some units and Soldiers currently in under-sized or inadequate facilities would have the opportunity to move to more appropriately sized or better equipped facilities. The available capacity of Fort Irwin's landfill would support the installation for a greater length of time as a result of this alternative.

4.9.9 Socioeconomics

4.9.9.1 Affected Environment

Fort Irwin is a major training area for the U.S. military and is a census-designated place located in the Mojave Desert in northern San Bernardino County, California. The ROI consists of San Bernardino County, which includes Fort Irwin CDP.

Population and Demographics. The Fort Irwin population is measured in three different ways. The daily working population is 5,539, and consists of full-time Soldiers and Army civilian employees working on post. The population that lives on Fort Irwin consists of 3,661 Soldiers and 5,006 dependents, for a total on-post resident population of 8,667. Finally, the portion of the ROI population related to Fort Irwin is 4,733 and consists of Soldiers, Army civilian employees, and their dependents living off post.

Compared to year 2000, the 2010 population increased 19.1 percent to over 2,000,000 in San Bernardino County. The racial and ethnic composition of the ROI is presented in Table 4.9-3.

Table 4.9-3. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
California	40	6	0	38	13	3	1
San Bernardino	33	8	0	49	6	2	0

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased in San Bernardino County and decreased in the State of California. Employment, median household value and household income, and poverty levels are presented in Table 4.9-4.

Table 4.9-4. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
California	12,833,709	- 0.41	479,200	58,925	14.20
San Bernardino	519,247	+ 11.50	338,300	52,137	17.00

On-Post Housing. Fort Irwin has approximately 2,030 military Family housing (MFH) units in nine major housing areas on the installation. Of the total MFH units, approximately 380 are

allocated to officers and 1,650 to enlisted personnel. Under the Community Development and Management Plan (CDMP) negotiated between the Army and Clark Pinnacle (a private developer), projections are that the number of MFH units at Fort Irwin will increase to 2,615. To date, 715 new housing units are in Crackerjack Flats, Sandy Basin Phase I, Sleepy Hollow, and Sandy Basin Phase II. Sandy Basin Phase II is currently being completed, which will add an additional 92 units.

Off-Post Housing. Most of the military and civilian personnel who reside off post live in Barstow and the adjacent small communities of Lenwood, Hinkley, Yermo, Daggett, and Newberry Springs, or in the communities of Victorville, Hesperia, and Apple Valley.

Housing units are divided almost equally between owner-occupied and renter-occupied units, reflecting the influence on the rental housing market of off-post Fort Irwin personnel. The vacancy rate is between 15 and 16 percent, and the large majority of vacant units are rental units. Characteristic of most communities of this size, the large majority of units are detached, single-family units, with over 10 percent of the total number of housing units being mobile homes.

Schools. School districts receive federal funding for students whose parent or parents live on or work on federal property. The amount of Federal School Impact Aid a district receives is based on the number of students who are considered "federally connected" and attend district schools.

The Silver Valley Unified School District provides K-12 educational services at Fort Irwin with three elementary schools, two middle schools, and two high schools. Three schools are located on the installation, including Lewis Elementary School with a capacity of 695 students; Tiefort View Intermediate School with a capacity of 500 students; and Fort Irwin Middle School with a capacity of 594 students. Enrollment in the 2009/2010 school year at Lewis Elementary was 798, at Tiefort View Intermediate it was 465, and at Fort Irwin Middle School it was 398 (California Department of Education, 2010).

Public Services, Health, and Safety. A number of services and facilities available on post contribute to the quality of life experienced by residents. These services include law enforcement, fire protection, medical services, schools, Family support services, retail shops and services, and recreational facilities.

- **Law Enforcement Services.** Law enforcement at Fort Irwin is provided by 60 personnel. The installation also maintains a cooperative agreement with the San Bernardino County Sheriff.
- **Fire Protection Services.** Off-post fire protection services in the region are provided by the Barstow Fire Protection District, which has three fire stations. The Fire Protection District is staffed by 25 paid firefighters, 6 volunteer firefighters, and 2 non-firefighting employees (Fire Departments Net, 2010). Fort Irwin maintains a mutual assistance agreement with the Barstow Fire Protection District.
- **Medical and Dental Services.** The Medical Department Activity and Dental Activity at the installation provide essential health services to Fort Irwin residents. Weed Army Community Hospital is a 29-bed, one-story facility that houses inpatient and ancillary functions. The hospital was built originally in 1968, with two subsequent additions in the 1980s. The Mary E. Walker Clinic is an ambulatory-care clinic built in 1997 to consolidate most outpatient functions, including outpatient-related administrative functions. Outpatient services include primary care, optometry, audiology, orthopedics, obstetrics and gynecology, mental health, emergency services, preventive medicine, internal medicine, Exceptional Family Member Program, laboratory, pediatrics and baby

care, physical exams, physical therapy, radiology, social work services, and substance abuse and rehabilitation services.

The on-post dental care facility is approved to provide dental care to Active Duty military members. Services provided include general dentistry, pediatric dentistry, oral surgery, and orthodontics. Family members acquire dental services located off-post in neighboring communities.

The primary off-post healthcare provider in the area is the Barstow Community Hospital, with a 56-bed capacity. Also in the immediate area are 61 physicians and surgeons, 19 dentists, 4 optometrists, 6 chiropractors, a convalescent home, and an ambulance air service.

- **Family Support.** Fort Irwin supports numerous programs and services to assist installation residents and employees. Family support includes Family counseling, career counseling, and financial counseling. Fort Irwin has two child development centers, a teen center, a school liaison, and youth sports and fitness planning.
- **Shops and Services.** Services available on Fort Irwin include two shoppettes, a laundry facility, a hotel, and several fast food restaurants. On-post shopping includes the Main Store Mall (12 shops), the Mini Mall (shops and services), the commissary, and the thrift shop. Services available include beauty and barber services, dry cleaning, flower shops, tailoring, eye care, video rental, auto rental agency, two gas stations, and laundry facilities. One multiplex theatre is on the installation.

Protection of Children. E.O. 13405 seeks to protect children from disproportionately incurring environmental health or safety risks that might arise as a result of Army policies, programs, activities, and standards.

Fort Irwin has engaged in an aggressive MFH replacement and upgrade program in recent years. This program has resulted in the construction of 438 housing units since 2000. Potential health and safety concerns are often associated with the presence of lead-based paint and asbestos-containing material (ACM) in residential and other buildings. With the replacement and upgrade of the on-post housing units, the potential for adverse impacts to children has been reduced substantially.

Environmental Justice. On February 11, 1994, President Clinton issued E.O. 12898, "Federal Actions to Address Environmental Justice in Minority and Low-Income Populations." The E.O. is designed to focus the attention of federal agencies on the human health and environmental conditions in minority communities and low-income communities. Environmental justice analyses are performed to identify potential disproportionately high and adverse impacts from Proposed Actions and identify alternatives that might mitigate the impacts.

The proportion of the total population of minority groups is higher for the City of Barstow than for San Bernardino County and the State of California, while that for ZIP Code area 92311 is lower. Proportions of minority populations for all geographical areas exceed 50 percent. The proportion of the population below the poverty level in the City of Barstow and in ZIP Code area 92311 is higher than for San Bernardino County and the State of California.

4.9.9.2 Environmental Consequences

No Action Alternative

There would be no change or minor impacts anticipated under the No Action Alternative. Fort Irwin would continue providing a positive economic impact to the surrounding community as a result of this alternative. No additional impacts to housing, public and social services, public schools, public safety, or environmental justice are anticipated.

Alternative 1: Force Reduction (up to 2,400[1] Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of up to 2,400 military (uniformed Soldier and Army civilian employee) positions, each with an average annual income of $41,830. In addition, this alternative would affect an estimated 1,325 spouses and 2,280 dependent children, for a total estimated potential impact to 3,605 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 5,980 military employees and their dependents.

Based on the EIFS analysis, there would be no significant impacts for sales volume, income, populations, or employment. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.9-5. Table 4.9-6 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.9-5. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Positive	13.48	12.75	3.64	3.64
Negative	- 5.93	- 4.33	- 3.85	- 2.16
Forecast Value	- 0.38	- 0.27	- 0.60	- 0.30

Table 4.9-6. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- $171,974,300	- $119,851,500	- 2,558 (Direct) - 541 (Indirect) - 3,129 (Total)	- 5,980
Percent	- 0.38	- 0.27	- 0.60	- 0.30

The total annual loss in sales volume from direct and indirect sales reductions in the ROI represents an estimated -0.38 percent change from the total current sales volume of $45.26 billion within the ROI. It is estimated that state tax revenues would decrease by approximately $12.03 million as a result of the loss in revenue from sales reductions. This does not include additional county sales tax, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by 0.27 percent. While approximately 2,400 Soldier and Army government civilian positions would be lost within the ROI, EIFS estimates another 183 contract service jobs would be lost as a direct result of the implementation of Alternative 1, and an additional 541 jobs would be lost indirectly as a result of the reduction in demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 3,129 jobs, or a -0.6 percent change in regional employment. The total number of employed non-farm positions in the ROI is estimated to be approximately 525,000. A population reduction of 0.30 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 2 million people

[1] Calculations used a number of 2,375 Soldiers and civilians for estimating socioeconomic impacts. This number was derived by assuming the loss of 35 percent of the installation's Soldiers and up to 15 percent of the civilian workforce. As discussed in Chapter 3, this number is rounded to the nearest hundred personnel when discussing impacts of Alternative 1.

(including those residing on Fort Irwin) that live within the ROI, 5,980 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes civilian and military employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.9-7 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.9-7. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- $108,599,501 (Local) - $174,639,519 (State)	- $218,540,864	- 2,683 (Direct) - 342 (Indirect) - 3,025 (Total)
Percent	- 0.23	- 0.50	- 0.58

The total annual loss in sales volume from direct and indirect sales reductions in the region represents an estimated -0.23 percent change in total regional sales volume according to the RECONS model, an impact that is 0.15 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately $12.22 million as a result of the loss in revenue from sales reductions, which would be $190,000 more than projected by the EIFS model. Regional income is projected by RECONS to decrease by 0.50 percent, slightly more than the 0.27 percent reduction projected by EIFS. While approximately 2,400 Soldier and Army government civilian positions would be lost within the ROI, RECONS estimates another 308 military contract and service jobs would be lost, and an additional 342 job losses would occur indirectly as a result of the reduction in demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 3,025 jobs, or a -0.58 percent change in regional employment, which would be 0.02 percentage points less than projected by the EIFS model.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 1 would lead to a similar net reduction of economic activity within the ROI.

Housing Impacts. Alternative 1 would increase availability of single occupancy barracks and single Soldier housing. If the number of permanent party Soldiers were reduced by up to 2,400 personnel on Fort Irwin, there is a possibility that vacancies could occur in on-post Family housing. Implementation of the Proposed Action would not displace substantial numbers of existing housing or people off-post. Therefore, the Proposed Action would have no significant impact associated with housing.

Schools Impacts. Potential significant adverse impacts to Fort Irwin schools that support on-post dependents as a result of the implementation of Alternative 1 are anticipated. A decrease in enrollment would be expected with a decrease in on-post dependents. Outside of Fort Irwin, the proposed reduction would not affect any other school district disproportionately. Less than significant adverse impacts to school funding in the region as a whole are anticipated if Alternative 1 is implemented.

Public Services, Health and Safety, and Protection of Children. As a result of the implementation of Alternative 1, resident and daytime population levels on Fort Irwin would decrease and this could reduce demand on law enforcement, fire and emergency service providers, and on medical care providers on and off post. Active Duty military, rotational unit Soldiers, retirees, and their dependents, would continue to demand these services. Fort Irwin anticipates less than significant impacts to public health and safety, recreation, and protection of children under the Proposed Action.

Environmental Justice. As a result of the implementation of Alternative 1, a disproportionate adverse impact to minorities, economically disadvantaged populations, or children is not anticipated. Any job loss would be felt across economic sectors and at all income levels and spread geographically throughout the ROI. The proposed force reduction in military authorizations on Fort Irwin would not have disproportionate or adverse health effects on low-income or minority populations in the ROI. The racial and ethnic composition of the ROI differs from that of the state as a whole. There is a higher Hispanic and African American population and lower Asian population than in the state. The median household income in Barstow is almost 10 percent higher than in Fort Irwin, and per capita income is 28 percent higher. The proportion of the population living below the poverty level is more than 16 percent for Barstow and just over 3 percent for Fort Irwin. Income levels for both areas are substantially lower than the corresponding levels for the State of California. Fort Irwin anticipates less than significant impacts to minorities, economically disadvantaged populations, or children. Given the higher population of low-income and minority people in the area compared with the state as a whole, adverse impacts would be disproportionate.

4.9.10 Land Use Conflicts and Compatibility

4.9.10.1 Affected Environment

The primary land use at Fort Irwin is military training and would remain so with the implementation of either the No Action Alternative or Alternative 1. Fort Irwin supports heavy armored unit maneuvers of the Army and joint forces and supports large-scale combined arms maneuver training exercises.

4.9.10.2 Environmental Consequences

No Action and Alternative 1

Minor environmental impacts to installation land use are anticipated as a result of the implementation of either the No Action Alternative or Alternative 1. The installation has sufficient land and facilities to meet each unit's mission requirements as well as the requirements to train non-resident units as part of the NTC's training mission. Land use and existing facilities have been planned and coordinated to support the installation's training mission while remaining compatible with external land uses surrounding the installation. Changes in land use from the implementation of Alternative 1 would not be anticipated to occur. Fort Irwin would continue to support training activities of the NTC with the implementation of Alternative 1.

4.9.11 Hazardous Materials and Hazardous Waste

4.9.11.1 Affected Environment

Use, storage, transport, and disposal of hazardous materials and wastes occur at Fort Irwin. This includes hazardous materials and wastes from USTs and ASTs, pesticides, LBP, asbestos, PCBs, radon, and UXO. Fort Irwin manages a HWMP that manages hazardous waste to promote the protection of public health and the environment. The program manages all of the hazardous waste generated by Fort Irwin to ensure proper disposal, storage, and recovery of hazardous materials and protection of public health. Hazardous waste is managed in accordance with Fort Irwin's HWMP and applicable regulations.

4.9.11.2 Environmental Consequences

No Action and Alternative 1

Short- and long-term minor adverse impacts from hazardous materials and waste are anticipated as a result of the implementation of either the No Action Alternative or Alternative 1. A minor decrease in the storage and use of hazardous chemicals is anticipated in the cantonment and training and range areas as a result of Alternative 1. Demolition of facilities as a result of Alternative 1 would result in a temporary increase in the generation of asbestos, lead-contaminated wastes, and other hazardous waste as building materials are disposed of. There would be a minor decrease in the use of pesticides due to the reduction in Family housing and other facilities. Wastes would be managed in accordance with current standards and regulations. The hazardous waste disposal facilities would be adequate to manage the hazardous waste for either alternative. Waste management programs may be updated as needed to incorporate mission activities associated with units stationed at Fort Irwin and expanded training activities. In general, Fort Irwin would continue to implement its hazardous waste management in accordance with its HMWP and applicable regulations under either alternative.

4.9.12 Traffic and Transportation

4.9.12.1 Affected Environment

Fort Irwin is located approximately 37 miles northeast of Barstow, California. The ROI of the affected environment for traffic and transportation aspects includes Fort Irwin, and the neighboring communities of Yermo and Barstow, California. The major road in the region is I-15, a north-south interstate highway located about 20 miles from the cantonment area. I-15 links the installation to Barstow and Los Angeles, California, to the southwest, and Las Vegas, Nevada, to the northeast.

4.9.12.2 Environmental Consequences

No Action Alternative

Traffic conditions at Fort Irwin would remain unchanged. During peak hours of travel the installation's main ACP would continue to experience some delays. Overall, the transportation system does not experience significant congestion and LOS is adequate to support installation operations. Impacts under the No Action Alternative would be minor.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

Short and long-term minor beneficial impacts on traffic and transportation systems on the installation due to the reduction of 2,400 Soldiers, Army civilians, and their Family members would occur. There would be a reduction in the time of delays at the installation's main gate

ACP during morning and evening commutes. Spread across the ROI, this population would have *de minimis* impact on the overall traffic congestion in the neighboring communities.

4.9.13 Cumulative Effects

Fort Irwin has identified no foreseeable off-post projects, or on-post military operations or activities that would, in conjunction with Army strength reduction, result in adverse cumulative effects to the environment. The ROI includes the high desert of San Bernardino County and the Fort Irwin census-designated place in California. There would be no significant adverse environmental or socioeconomic impacts within the ROI that would occur given the large size of the population and economy of San Bernardino County.

4.10 JOINT BASE ELMENDORF-RICHARDSON, ALASKA

4.10.1 Introduction

As of October 2010, Joint Base Elmendorf-Richardson (JBER) reached full operational capability and Fort Richardson (FRA) and Elmendorf Air Force Base successfully merged operations and have ceased to exist as separately administered facilities. However, for purposes of this PEA, references to former FRA, former Elmendorf Air Force Base, and/or U.S. Army Garrison (USAG) may be used where proper to avoid confusion and where reference to JBER would be improper. Since this Proposed Action would mainly affect the Richardson side of JBER (JBER-Richardson), the focus of the analysis will be based on former FRA while still considering impacts to JBER as a whole. JBER-Richardson is bounded by the Knik Arm of the Cook Inlet to the north, the community of Eagle River and Chugach State Park to the east, Anchorage to the west, and Chugach State Park to the south (Figure 4.10-1) (JBER-Richardson bordered in orange) (USARAK, 2004).

Today, the major units under U.S. Army Alaska (USARAK) are the 1st SBCT, 25th Infantry Division, 1-52nd General Support Aviation Battalion, and 6-17th Air Cavalry, all three located at Fort Wainwright (FWA); and the 4th BCT (Airborne), 25th Infantry Division (commonly referred to as the Airborne BCT or 4/25 Airborne BCT) and 2nd Engineer Brigade located at JBER-Richardson. In 2008, Army growth resulted in approximately 1,800 additional Soldiers stationed at FRA.

The 4/25 Airborne BCT is comprised of a Brigade Headquarters, two infantry battalions, one field artillery battalion, a cavalry squadron, a brigade special troops battalion, and a brigade support battalion. The recent transformation of the 4/25 Airborne BCT is documented in *Environmental Assessment, Conversion of the Airborne Task Force to an Airborne Brigade Combat Team*, Fort Richardson, Alaska (USAG FRA, 2005), which was prepared subsequent to *Transformation of U.S. Army Alaska Final Environmental Impact Statement* (USARAK, 2004).

The 4/25 Airborne BCT, utilizes a range of individual and crew-served weapons systems including mortars and howitzers, which requires them to conduct live-fire and maneuver training at JBER-Richardson. The 4/25 Airborne BCT trains in the SAC and other sites on the northern and southern part of JBER-Richardson that make up the Richardson Training Area, JBER Alaska. The location of the Richardson Training Area is shown in Figure 4.10-1. The SAC is a developed range complex located on the southern part of JBER-Richardson; Glenn Highway borders the SAC to the north.

The 4/25 Airborne BCT has both Combat/Combat Support Soldiers with different training requirements. Combat Service Support would consist of personnel involved with logistics support, engineers, and military police. Combat Service Support training may be limited to weapons qualification convoy live fire, Improvised Explosive Device disposal, and field set up with limited field training (e.g., in support of tactical unit maneuvers), although they would generally train in the same areas as Combat Support units.

The USARAK inventory of ranges in the Richardson Training Area meets TC 25-8 standards and accommodates all of the 4/25 Airborne BCT's DA Pamphlet 350-38 (Standards in Training Commission) requirements. USARAK ranges have capacity to support additional use by units not assigned to the command. Training would continue in accordance with management practices as outlined in previous NEPA documents.

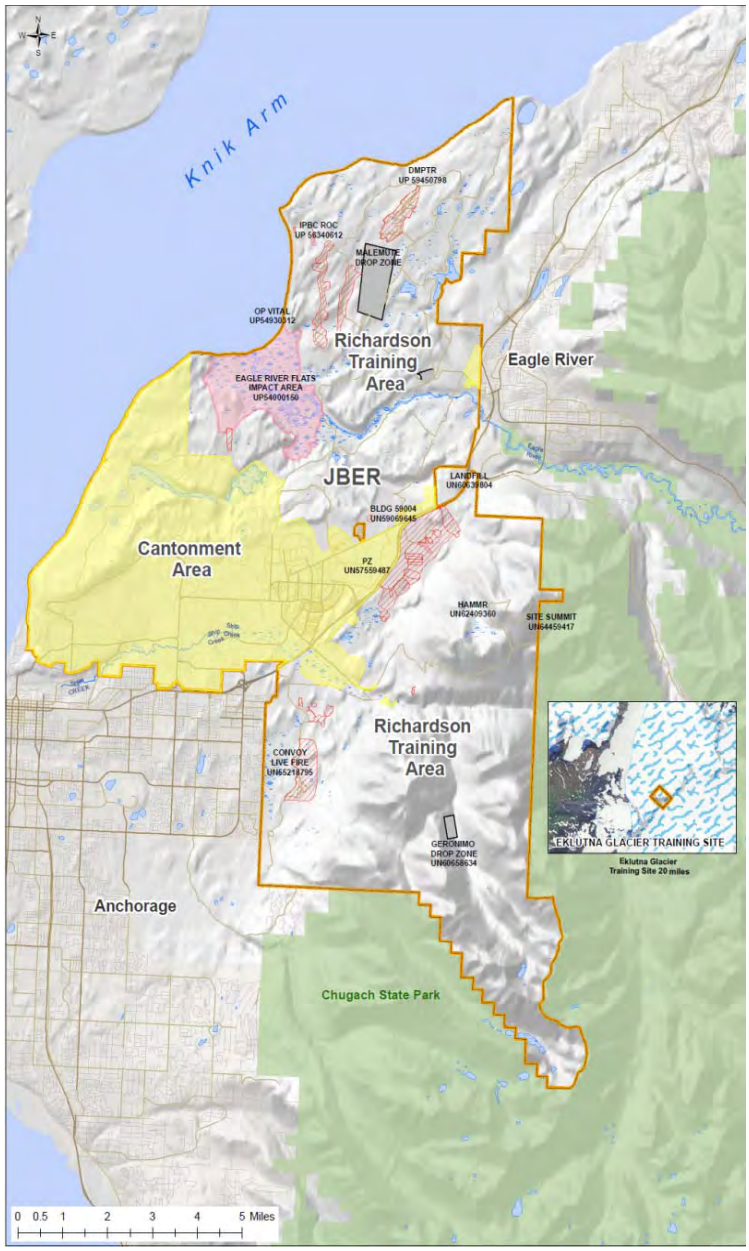


Figure 4.10-1. Joint Base Elmendorf-Richardson

The total Soldier population of the 4/25 Airborne BCT is approximately 3,500 Soldiers. The current estimated JBER population is 38,685 (U.S. Air Force at 5,700, U.S. Army at 6,900, U.S. Marine Corp at 90, U.S. Navy at 135, National Guard at 1,040, Air National Guard at 1,480, Coast Guard at 90, with approximately 20,250 joint service Family members, and 3,000 civilian employees (JBER Brochure n.d.).

Army units stationed at JBER may also train at ranges located at Donnelly Training Area (DTA). Training at DTA would primarily facilitate large unit maneuvers, e.g., company level and above. More information on training that may occur at DTA may be found in *Transformation of U.S. Army Alaska Final Environmental Impact Statement* (USARAK, 2004) and the sections of this PEA that pertain to DTA.

4.10.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, JBER does not anticipate any significant adverse environmental impacts as a result of the implementation of Alternative 1 (Force reduction of up to 4,300 Soldiers and Army Civilians) or Alternative 2 (Installation gain of up to 1,000 Soldiers). However, further environmental analysis including consultation under the ESA and/or the Marine Mammal Protection Act (MMPA) would be required for Alternative 2 to ensure no significant impacts would occur. In addition, the Air Force requires that a basing actions be submitted to Headquarters Air Force A8 in accordance with Air Force Instruction 10-503. The Army anticipates potentially significant adverse socioeconomic impacts to regional employment and population as a result of the implementation of Alternative 1. Table 4.10-1 summarizes the anticipated impacts to VECs from each alternative.

Table 4.10-1. Joint Base Elmendorf-Richardson Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 4,300	Alternative 2: Growth of up to 1,000
Air Quality	Less than Significant	Beneficial	Less than Significant
Airspace	Minor	Beneficial	Minor
Cultural Resources	Significant but Mitigable	Significant but Mitigable	Significant but Mitigable
Noise	Minor	Beneficial	Less than Significant
Soil Erosion	Less than Significant	Minor	Less than Significant
Biological Resources	Significant but Mitigable	Minor	Significant but Mitigable
Wetlands	Less than Significant	Beneficial	Less than Significant
Water Resources	Minor	Beneficial	Less than Significant
Facilities	Minor	Minor	Less than Significant
Socioeconomics	Beneficial	Significant	Beneficial
Energy Demand and Generation	Minor	Beneficial	Minor
Land Use Conflict and Compatibility	Minor	Minor	Less than Significant
Hazardous Material and Hazardous Waste	Less than Significant	Less than Significant	Less than Significant
Traffic and Transportation	Less than Significant	Beneficial	Less than Significant

The analysis of environmental consequences is grouped into four categories: cantonment construction, range maintenance, live-fire training, and maneuver training as the majority of environmental impacts would be associated with these types of training/associated activities. However, where training does not fall within these areas and/or there is the potential for unique environmental impacts from certain other types of training, it will be specifically mentioned. Cantonment construction includes all construction-related work (e.g., renovations, demolition, and maintenance). Range maintenance would include similar construction-related impacts as the types of vehicles used would be the same used in the cantonment area.

To the extent practicable, this PEA will direct the reader to previous NEPA documents for more detailed information. Many of these documents are available electronically at http://www.jber.af.mil/library/environmental/epc/index.asp. For information on how to locate documents not available at this website, please contact the 673d Air Base Wing Public Affairs Office:

Joint Base Elmendorf-Richardson Public Affairs
10480 22nd Street, Suite 123, JBER, Alaska 99506
(907) 552-8151
pateam@elmendorf.af.mil

4.10.2 Air Quality

4.10.2.1 Affected Environment

The ROI for this VEC is JBER and the surrounding communities within the Municipality of Anchorage (e.g., Eagle River, Chugiak, Eklutna, Peters Creek, and Birchwood), which may be affected by air quality impacts under this Proposed Action.

In accordance with the CAA, the EPA has established NAAQS for pollutants considered harmful to public health and the environment. These standards have been adopted by the State of Alaska. NAAQS exist for six principal pollutants and are presented in Table 4.10-2. These pollutants are referred to as "criteria" pollutants. Units of measure (e.g., parts per million [ppm]) are by volume. Primary standards are those that must be complied with as they are provided for the protection of the public health (e.g., children and elderly) whereas secondary standards are supplemental and are focused on protection of the public welfare (e.g., vegetation and buildings) (JBER, 2010a).

Table 4.10-2. National Ambient Air Quality Standards

Pollutant	Primary/ Secondary	Averaging Time	Level	Form
CO	Primary	8-hour	9 parts per million (ppm)	Not to be exceeded more than once per year
		1-hour	35 ppm	
Lead	Primary and Secondary	Rolling 3 month average	0.15 µg/m^3 (microgram per cubic meter)[1]	Not to be exceeded
Nitrogen Dioxide	Primary	1-hour	10 ppb (parts per billion)	98th percentile, averaged over 3 years
	Primary and Secondary	Annual	53 ppb [2]	Annual Mean

Table 4.10-2. National Ambient Air Quality Standards (Continued)

Pollutant	Primary/ Secondary	Averaging Time	Level	Form
O_3	Primary and Secondary	8-hour	0.075 ppm [3]	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
$PM_{2.5}$	primary and secondary	Annual 24-hour	15 µg/m^3 35 µg/m^3	98th percentile, averaged over 3 years
PM_{10}	primary and secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide	primary	1-hour	75 ppb[4]	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Source: EPA, 2011, available at http://www.epa.gov/air/criteria.html (last accessed December 1, 2011).
[1]Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
[2]The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.
[3]Final rule signed March 12, 2008. The 1997 O_3 standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, EPA revoked the 1-hour O_3 standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour O_3 standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.
[4]Final rule signed June 2, 2010. The 1971 annual and 24-hour SO_2 standards were revoked in that same rulemaking. However, these standards remain in effect until 1 year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

Areas that are in compliance with the NAAQS are referred to as attainment areas, while areas in noncompliance with the NAAQS are designated as non-attainment areas. Areas that have been redesignated from nonattainment to attainment are maintenance areas. A conformity determination under the CAA Section 176(c) is required for federal actions when the activity is located within a non-attainment or maintenance area. The purpose of the conformity analysis, generally, is to ensure that an activity would not cause or contribute a violation of the NAAQS or affect attainment with NAAQS (EPA, 2012a). Anchorage is classified as a maintenance area for CO and Eagle River is a nonattainment area for PM_{10}. The primary source of CO emissions in Anchorage is motor vehicles (approximately 83.6 percent), which are believed to be the result of engine "cold starts" during the winter months. Based on air quality monitoring results from 1980 to 2002, there appears to be a downward trend of CO emissions whereas fugitive dust due to unpaved roads accounts for a large percent of Eagle River PM_{10} emissions (MoA, 2004).

JBER is outside the boundaries of the Anchorage maintenance area and the Eagle River nonattainment area, and; therefore, a conformity determination is not required (Fowler, 2011). Prior to merging as a joint base, both FRA and Elmendorf Air Force Base managed their air emissions through disaggregation by Standard Industrial Classification code (SIC). This approach continued following the merge. Under this approach, each stationary emission source is assigned to one of 15 SIC codes based upon the functional activity it supports. Each SIC is evaluated for permit requirements separately from other SICs. Currently, JBER-Elmendorf has a Title V (operating) permit for SIC 45 - Transportation by Air, and an Owner Requested Limit for SIC 80 - Health Services. JBER-Richardson has three Title I (minor) permits for SIC 65 - Real Estate, SIC 70 - Hotels/Lodging, and SIC 97 - National Security (Fowler, 2011). JBER is not a major source for HAPs (Fowler, 2011). JBER is the owner/operator of the aforementioned permits; however, as a result of the privatization of utilities on JBER-Richardson, a private contractor (i.e., Doyon Utilities) is responsible for their own emissions and permitting (JBER, 2010a; Fowler, 2012).

Activities addressed by this PEA are anticipated to primarily fall under JBER-Richardson SIC 97, with sources added from construction of barracks falling under SIC 70; emission sources will be evaluated for permit requirements accordingly (Fowler, 2011).

No ambient air monitoring is performed on JBER; however, JBER maintains an emissions inventory for stationary sources (Fowler, 2011). Although JBER is not within the maintenance area or the nonattainment area, JBER is a major source of CAPs, specifically NO_x and CO. The problems associated with CO and inhalable PM are usually related to localized conditions, such as congested traffic intersections or construction activities, whereas other criteria pollutants, such as NO_x, are associated with more regionalized problems that result from the interaction of pollutants from a great number of widely dispersed sources (e.g., a large city containing many stationary and mobile sources) (JBER, 2010a). Table 4.10-3 shows JBER's estimated emissions summary for 2010.

Table 4.10-3. Joint Base Elmendorf-Richardson Estimated Emissions Summary (2010)

JBER Stationary Source Group	Criteria Pollutant Potential to Emit (tons per year)				
	NO_x	CO	PM	VOCs	SO_x
45 – Transportation By Air (Flight Line)	249.426	137.711	18.669	15.426	6.692
48 – Communications	14.598	3.589	1.064	1.133	0.824
58 – Eating and Drinking Places	20.501	9.112	1.650	1.256	0.256
65 – Real Estate	60.862	32.388	4.916	3.557	0.388
70 – Hotels, Rooming Houses, Camps & Other Lodging	99.410	51.616	7.808	5.650	0.616
72 – Laundry and Garment Services	5.212	5.628	1.399	2.206	0.139
78 – Motion Pictures	2.830	1.138	0.234	0.169	0.018
79 – Amusement and Recreation Services	20.846	8.711	1.717	1.243	0.136
80 – Health Services	31.038	24.850	2.361	1.736	0.243
82 – Educational Services	10.975	5.443	0.891	0.645	0.070
83 – Social Services	10.812	5.090	0.882	0.638	0.070
86 – Membership Organizations	1.092	0.439	0.090	0.065	0.007
87 – Engineering, Accounting, Research, & Management	84.176	34.758	6.559	4.872	1.707

Table 4.10-3. Joint Base Elmendorf-Richardson Estimated Emissions Summary (2010) (Continued)

JBER Stationary Source Group	Criteria Pollutant Potential to Emit (tons per year)				
	NO_x	CO	PM	VOCs	SO_x
92 – Justice, Public Order, and Safety	9.338	4.920	0.731	0.578	0.157
97 – National Security	80.543	34.364	6.060	4.708	2.380
JBER-E Title V Operating Permit, SIC 45, 30-03-10 (PTE)	264.7	152.7	25.0	34.5	93.8

Source: F22 Plus-Up Environmental Assessment (JBER, 2011a), Table 3.4-3 at 3-29, available at http://www.jber.af.mil/library/environmental/epc/index.asp

Vehicles emissions for vehicles that may be in use at JBER-Richardson have been previously evaluated and estimated. Table 4.10-4 provides the emission rate for a High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) and a M1117 Armored Security Vehicle in addition to Table 4.10-5 which presents general emission rates for a variety of vehicles based on weight.

Table 4.10-4. Exhaust Emissions of the High Mobility Multi-Purpose Wheeled Vehicle and Armored Security Vehicle

Emission	High Mobility Multi-Purpose Wheeled Vehicle (gallons per mile per hour)	Armored Security Vehicle (gallons per mile per hour)
NO_x	480	1,210
HC [hydrocarbons]	37.5	153.4
CO	270	143
particulates	34.5	50.2

Source: PEA for Use of the M1117 Armored Security Vehicle at Army installations in the U.S. (U.S. Army, 2008b).

Table 4.10-5. MOBILE Annual Emission Summary (in tons per year) for All Stryker Brigade Combat Team Fleet Training Activities at Fort Wainwright

Pollutant	Light Duty Diesel (0-6,600 pounds)	Diesel Vehicles (8,501 – 10,000 pounds)	Diesel Vehicles (19,501 – 26,000 pounds)	Diesel Vehicles (33,000 – 60,000 pounds)	Diesel Vehicles (> 60,000 pounds)	Total Emissions
NOx[2]	4.5	4.0	2.1	20.6	1.4	32.6
CO[3]	7.1	1.0	0.4	4.3	0.3	13.1
VOC[4]	4.2	0.2	0.1	0.8	0.1	5.4

Source: USARAK, 2004.

Note that inclusion of Tables 4.10-4 and 4.10-5 is for illustrative purposes only as the rate of emissions presented in these tables are specific to past actions evaluated in the above referenced NEPA documents. Specific analysis would be required for this Proposed Action to determine the actual rate of emissions based on actual vehicles in use and to be used at JBER; however, for purposes of this PEA, the use of vehicles under the Proposed Action would be a

continuation of those that presently exist at JBER and for which the use has already been analyzed in past NEPA documents.

In addition to vehicle emissions during training, use of weapons also emit pollutants, although it has been determined to have low emissions rates. More information can be found at EPA's Technology Transfer network Clearinghouse for Inventories & Emissions Factors, AP42, Fifth Edition, Volume I, available at www.epa.gov/ttn/chief/ap42/ch15/ index.html. In addition, approximately 99.8 percent of munitions are consumed during combustion, resulting in minimal deposition on ranges/training lands if munitions operate properly (high order detonation) (U.S. Army, 2008).

E.O. 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, sets forth a series of polices for federal agencies to, in part, make reduction of GHG emissions a priority for federal agencies. The principal GHGs are CO_2, CH_4, N_2O, and fluorinated gases (EPA, 2012b). GHGs trap heat and warm the atmosphere (JBER, 2010a). CEQ guidance sets 27,563 tpy of CO_2 equivalent emissions effect threshold for a federal action under NEPA (JBER, 2010a). Military activities in Alaska are responsible for 5 percent of global GHG emissions within the state (JBER, 2011a). Recently, a stationary source applicability analysis for GHGs was completed in response to EPA's GHG reporting rule (Fowler, 2012). This analysis (which included a separate analysis for combustion sources and landfills) found that JBER's GHG emissions were below the reporting threshold of 25,000 tpy CO_2 equivalent for each of the two source categories (Fowler, 2012). JBER is currently pursuing efforts to reduce energy consumption in base facilities. In addition, forests on JBER may act as a carbon sink or source (USAG Alaska, 2010). Forests take up carbon from the atmosphere through photosynthesis, and lose it through respiration, decomposition, and through emissions associated with disturbances like fire, insect mortality, and harvesting (USAG Alaska, 2010). The balance between carbon uptake and losses determines whether the forest is a net sink or source for a given period (USAG Alaska, 2010). More information is required to determine whether forests on JBER are acting as a carbon sink or source.

Other activities and naturally-occurring events may contribute to the generation of criteria pollutants and/or GHGs. Fires have the potential to generate smoke containing CO_2, water vapor, CO, PM, hydrocarbons and other organics, NO_x and trace minerals (ADEC, 2001). Although wildfires are a concern at JBER-Richardson, they are rarely a significant problem (U.S. Army, 2008). The last fire at JBER-Richardson larger than 50 acres occurred in 2007 (U.S. Army, 2008). Prescribed burns are carried out about once a year at JBER-Richardson (Robinson, 2011). Temperature inversions may also contribute to the degradation of air quality by trapping CO close to the ground, sometimes resulting in conditions where Anchorage exceeds the NAAQS CO standard.

4.10.2.2 Environmental Consequences

No Action Alternative

There would continue to be less than significant short- and long-term air emissions impacts from training and installation operations. Permit conditions would continue to be monitored and met, but no changes to emission sources are anticipated, other than those mandated by maintenance, replacement, or elimination of sources as they age or are removed from service.

Cantonment Construction. Mobile and stationary source emissions would adversely affect air quality. Mobile source emissions would include fugitive dust and PM from use of heavy machinery and other construction vehicles. Stationary source emissions would be generated at existing and new facilities, if current planned projects are funded, within the cantonment area.

As to mobile source emissions, BMPs could be developed to mitigate against unavoidable impacts of using vehicles, e.g., no idling engines.

The construction of new buildings may require the use of small boilers and/or water heaters. Each new construction and renovation project would be evaluated for JBER air program requirements and new emission sources would be incorporated into the JBER annual emissions inventory. New construction already programmed for the 4/25 Airborne BCT (new barracks) is anticipated to fall under JBER-Richardson under SIC 70; however, a review of 2010 JBER emissions suggests additional emissions would not exceed the annual thresholds. A Minor Source Title I permit may be required for construction projects that propose to construct or modify a stationary source. Because JBER resides in an attainment area for all criteria pollutants, a conformity analysis would not be necessary for new construction. Continuation of baseline condition is not anticipated to cause JBER or surrounding areas to violate the NAAQS as current trends indicate that CO, for example, is decreasing in neighboring Anchorage.

Recent energy conservation measures and demolition of inefficient buildings on JBER may eventually result in a decrease of criteria pollutant emissions being generated at stationary sources. It is possible that new construction would not result in a measurable increase of emissions where operationally inefficient buildings are replaced with energy efficient buildings.

Generation of GHG emissions may occur; however, based on 5 percent impacts military activities have in Alaska, the contribution of JBER would be much lower and continuation of the status quo would not likely breach the CEQ threshold for effect under NEPA. In support, the recent GHG stationary source applicability analysis for JBER indicates that GHGs at JBER are within acceptable levels. However, since JBER GHG emissions are not fully inventoried, further analysis may be required to validate this assumption.

Range Maintenance. Maintenance activities (e.g., paving/grading) would result in the same or similar impacts to cantonment construction (i.e., mobile source emissions), although impacts would be less than for new construction. Prescribed burn and/or fuels management may occur in areas near ranges and training areas to prevent wildfire from preventing use of these areas for training. The potential to generate GHG emissions is the same as discussed under Cantonment Construction (No Action Alternative).

Live-Fire Training. Weapon emissions may occur at firing points and/or the impact area, although emissions would likely be low. Air impacts would be localized and represent both short-term impacts during the exercise and long-term impacts as long as training continues. Use of weapons carries the risk of starting wildfires. Wildfires are not frequent on JBER, but may create both short- and long-term adverse impacts to air quality by generating CO, PM_{10} and $PM_{2.5}$, and Polycyclic Aromatic Hydrocarbons, among other combustion byproducts.

The potential to generate GHG emissions is the same as discussed under Cantonment Construction (No Action Alternative).

Maneuver Training. Vehicle emissions from on-road maneuvering, e.g., training occurring on roads, trails, or hardened surfaces, would increase the occurrence of opacity or fugitive dust emissions; however, these effects are anticipated to be localized to the range area. Emissions from maneuvering would include PM, CO, and O_3. BMPs for mobile sources could mitigate vehicle emissions (see cantonment construction above). Although data is not readily available in regards to current vehicular emissions generated by the 4/25 Airborne BCT, the baseline conditions are the result of prior NEPA analyses that have determined no significant impacts from use of vehicles that are currently in use at JBER. The potential to generate GHG emissions is the same as discussed under Cantonment Construction (No Action Alternative).

In summary, less than significant impacts are anticipated from continued operations, although adverse impacts to air quality are anticipated from both mobile and stationary emission sources in addition to naturally occurring activities. It is not anticipated that continuation of the status quo would result in a violation of air quality standards at JBER or cause surrounding communities to violate such standards. Further analysis would be necessary to quantify these impacts.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

There would be an anticipated beneficial impact to regional air quality from reduced stationary and mobile emission sources. There would be less combustion and generation of CAPs and HAPs associated with military training.

Construction-related impacts and impacts of facilities demolition would be temporary and would include an increase in dust mobile source emissions from construction vehicles and limited demolition activity. Long-term effects from reduction of these units at JBER would include a decrease in stationary source emissions such as from boiler units and generators used in new facilities and by units using transportable generators during training operations. No additional private or military fleet vehicles would contribute to air pollutants (for example CO and O_3) in the vicinity of JBER's cantonment area. Since no training infrastructure construction would occur, no soil disturbance generating fugitive dust would occur. Additionally, no effects from the added use of generators or from construction vehicles would occur. Localized emissions from the live fire of small arms weapons would decrease. However, rifles and machine guns generally have very low emissions rates. Also, the risk of wildfires would decrease, eliminating the possibility of military-caused short-term adverse impacts to air quality.

A decrease in maneuver activities would occur resulting in a decrease of opacity or fugitive dust emissions, and vehicle emissions, including PM, CO, and O_3.

Cantonment Construction. The reduction in force has the potential to reduce air emissions to below baseline conditions in regards to both stationary and mobile sources over the long term. The reduction of approximately 4,300 Soldiers and civilians would result in a reduction in the JBER population of approximately 11 percent (excluding dependents). Despite this decrease, JBER would still generate emissions and have to maintain compliance with any Title 1 and Title V permits. This population reduction may result in a re-evaluation of the current JBER construction, demolition and consolidation plans to determine the path ahead for JBER. The potential to generate GHG emissions is the same as discussed under Cantonment Construction (No Action Alternative).

Range Maintenance. Same general considerations as the No Action; however, the reduction in force has the potential to reduce air emissions to below baseline conditions in regards to mobile sources used for maintenance activities.

The potential to generate GHG emissions is the same as discussed under Cantonment Construction (No Action Alternative).

Live-Fire and Maneuver Training. The force reduction has the potential to reduce air emissions from weapon use to below baseline conditions because of decreased training requirements and also reduce vehicle combustion as a result of less frequent maneuver training events. However, the risk of fire as a result of training would remain. The potential to generate GHG emissions is the same as discussed under Cantonment Construction (No Action Alternative).

In summary, reduced impacts are anticipated from decreased mobile and stationary source emissions of criteria pollutants and/or GHGs to below baseline conditions. Further analysis would be necessary to quantify these potential impacts.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be an anticipated less than significant impact on air quality in the airsheds surrounding JBER as a result of implementing Alternative 2. There would be an anticipated minor increase in air emissions from both mobile and stationary sources that would be generated to support additional Soldiers and their Families. Though JBER can expect increased emissions from military vehicles and generators used to support training events as well as an increase in fugitive dust, the increase of 1,000 Soldiers would not have significant impacts to regional air quality. JBER would not be anticipated to exceed the emissions limits of its Title V permit or to engage in activities causing any change in attainment status or exceedance of NAAQS, though specific analysis would be required to confirm this conclusion.

Cantonment Construction. Additional Soldiers and their Families at JBER would tend to increase the rate of maintenance activities due to increased use of facilities within the cantonment area. These additional Soldiers would represent a 3 percent increase in the military population at JBER. Although no new construction is proposed with this increase, it is not certain that JBER can currently accommodate this increase within existing facilities. This population increase may require a re-evaluation of the current JBER consolidation plan so to retain existing buildings presently slated for demolition, to avoid new construction. In either case, increased emissions may be generated by adding new facilities or increasing the use of existing yet operationally inefficient buildings. It is possible that emissions from stationary sources for O_3 and NO_x may breach the annual emissions threshold in the future and require permitting action.

The potential to generate GHG emissions is the same as discussed under Cantonment Construction (No Action Alternative).

Range Maintenance. Range maintenance is similar to that discussed under Cantonment Construction (mobile source emissions). As with cantonment construction, additional Soldiers at JBER would tend to increase the rate of maintenance activities on existing ranges and training areas due to increased use and wear and tear of roads; however, past range expansions that have occurred on JBER-Richardson have resulted in sufficient space to absorb an additional 1,000 infantry Soldiers.

Live-fire Training. The increased weapons emissions would likely occur as a result of increased throughput at the training areas and ranges; however, emissions from weapons are low. Based on the proposed increased, it is possible that emissions currently generated by the 4/25 Airborne BCT could increase by up to 29 percent; however, considering JBER as a whole, it is possible that emissions from weapons firing may increase by only 14.5 percent over current conditions. However, it should be noted that percent population increase does not necessarily equate to the percent increase of air emissions from weapons firing activities. Impacts to air quality from increased live-fire activities would be minor.

Maneuver Training. Increased vehicular emissions would occur as a result of increased maneuver training. The same considerations discussed under live-fire training (percent increase) pertain to this alternative as well. A 1,000 Soldier increase would not be projected to cause significant impacts to air quality based on a review of past NEPA documentation, such as the 2008 *Grow the Army EA*, which determined that an increase in 1,773 Soldiers would not significantly affect air quality.

Significant impacts are not anticipated, although adverse impacts to air quality would occur from increased use of facilities and ranges and training areas on JBER. Even if increased emissions may lead to new permitting requirements, it would still be unlikely that this increase would lead to a violation of NAAQS or cause surrounding communities to violate the NAAQS. Further analysis would be necessary to quantify these impacts.

4.10.3 Airspace

4.10.3.1 Affected Environment

The ROI for this VEC is airspace within JBER and the surrounding areas within the Municipality of Anchorage that may be affected by this Proposed Action.

There are competing requirements for airspace by both military and commercial or private and civilian air traffic surrounding JBER; however, as explained in the recent *F22 Plus Up EA*, there has been no conflict with civil aviation from joint use of the airspace for the past 60 years (JBER, 2011a). Anchorage International Airport is the nearest commercial airport and is located about 15 miles southwest of JBER, but other civilian airports in the area of JBER include Merrill Field, Birchwood General Aviation, and two floatplane bases (JBER, 2010a). JBER includes the JBER-Elmendorf Airfield and Bryant Army Airfield on JBER-Richardson (JBER, 2010a).

Class D controlled airspace has been established around the JBER-Elmendorf airfield, which abuts Class C controlled airspace around the Anchorage International Airport to the southwest and the restricted airspace (Restricted Area 2203 [R-2203]) over JBER-Richardson to the northeast (JBER, 2011a). Note that restricted airspace also exists at DTA (R-2202) and is used by units stationed at JBER-Richardson. Current efforts (apart from this PEA) are being pursued to acquire additional restricted areas in the DTA via the *Joint Pacific Alaska Range Complex EIS*. It is important to note that this Proposed Action does not drive the need for additional restricted areas at DTA as those efforts are being pursued under the *Joint Pacific Alaska Range Complex EIS* and are a result of training and mission requirements.

A restricted area is designated airspace that supports ground or flight activities that could be hazardous to non-participating aircraft (JBER, 2011a). R-2203 includes the southern tip of Eagle River Flats (ERF) impact area and some of JBER- Richardson's training areas. Training Areas 410, 411, 412, 413, 414, 415, 418, 419 are located underneath R-2203. R-2203 is closed to aircraft about 20 days per year for weapons training. About 30 percent of airspace closures in R-2203 can be attributed to the activities associated with the 4/25 Airborne BCT's training requirements. Operating hours of R-2203 is between 5:00 AM to 12:00 PM. Coordination between JBER and the FAA ensure that when the restricted area is active, no aircraft pass over the land that it overlies. For more information on airspace at and/or near JBER, see *F22 Plus-Up EA* (JBER, 2011a).

No formal designation of airspace exists for Bryant Army Airfield at this time; however, a request has been made to designate the airspace over Bryant Army Airfield as Class D. A letter of agreement is being prepared to identify roles and responsibilities between Bryant Army Airfield Air Traffic Control Tower and JBER-Elmendorf Airfield Air Traffic Control Tower.

Table 4.10-6 shows hours scheduled for restricted airspace versus used at JBER-Richardson and DTA in 2008, with recent JBER data in parentheses (2010-2011 data). Unused airspace time is able to be returned to the public and private use (USARAK, 2008).

Table 4.10-6. Summary of Hours Used for Restricted Airspace

Restricted Airspace	Hours Scheduled	Hours Actually Utilized	Unused Army Flight Hours	Total Unused Joint Flight Hours
Fort Wainwright				
R2205	2,926 (2795)	2,388 (1721)	438	6,372
Fort Richardson				
R2203 A	4,997 (4,921)	184 (113)	4,813	8,576 (4,808)
R2203 B	5,016 (5,092)	343(827)	4,673	8,417 (4,265)
R2203 C	5,035 (4,978)	225 (187)	4,810	8,535 (4,791)
Donnelly Training Area				
R2202 A	3,591 (3797.5)	3,591 (3797.5)	0	5,169
R2202 B	3,344.5 (2960.5)	3,344.5 (2960.5)	0	5,415.5
R2202 C	2,708.25 (3,207)	2,708.25 (3,207)	0	6,051.75
R2202 D	2,435.75 (2,294)	2,435.75 (2294)	0	6,324.25

Source: USARAK, 2008; IRO, 2012.

In addition, two CFAs exist in the southern part of JBER near the SAC at JBER-Richardson. These areas contain activities that, if not conducted in a controlled environment, could be hazardous to nonparticipating aircraft. Training activities are suspended immediately when spotter aircraft, radar, or ground lookout positions indicate an aircraft might be approaching the area. CFAs would not affect airspace use as the activities within the small arms ranges at JBER-Richardson would stop once aircraft is spotted approaching the CFA.

4.10.3.2 Environmental Consequences

No Action Alternative

The No Action Alternative would not produce any new conflicts with overlying restricted airspace. Military airspace use supporting JBER would have minor impacts on airspace resources. Under the No Action Alternative, the current uses of the affected environment would continue.

***Cantonment Construction*.** No impacts on the availability of airspace, use of airspace, or ability to activate restricted areas. Although on-going construction, maintenance, renovation, demolitions and/or consolidation plans may involve buildings on or near the airfields, this would not implicate airspace use (e.g., require modifications to controlled or SUA). These activities could continue despite the use of airspace.

Range Maintenance. No impacts on the availability of airspace, use of airspace, or ability to activate restricted areas. Continued maintenance activities at existing ranges and training areas are not anticipated to affect airspace utilization. Maintenance activities would proceed despite the use of airspace.

Live-Fire Training. No impacts on the availability of airspace, use of airspace, or ability to activate restricted areas would occur. Current air traffic operations and airspace restrictions would remain as they currently exist (no increase). The 4/25 Airborne BCT is responsible for about 30 percent of the 20 days annual closures of restricted airspace R-2203. Range management of ranges/training areas would continue to ensure proper notification is provided to activate the use of R-2203 at JBER-Richardson and R-2202 at DTA.

***Maneuver Training*.** Impacts would be the same as live-fire training (training at current levels/continued management). Activation of R-2203 is possible if maneuver training includes indirect live fire at ERF Impact Area. This may be the case with collective training/crew gunnery.

Significant impacts are not anticipated to airspace as a result of ground-base weapons training or construction and maintenance operations because continued management of ranges/training areas would ensure shared-use and no modifications to controlled or SUA are required.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Impacts as a result of the implementation of Alternative 1 would be beneficial. The use of airspace would not change significantly with the loss of ground units as a result of this alternative. The military would continue to require airspace to support training. The implementation of Alternative 1 would result in a slight and marginally lower utilization rate of existing military. No range expansion projects would occur as a result of this alternative. Thus, no modifications to controlled or SUA are anticipated for additional restricted airspace to support surface danger zones over new ranges. Reduction in training would likely result in less utilization of SUA by the Army. Thus, adverse impacts associated with closures of certain SUA would be reduced. This could be a beneficial impact to members of the general aviation community. Maneuver training would occur at reduced levels, potentially resulting in less closures of SUA over military lands. Loss of the 4/25 Airborne BCT would be anticipated to result in a reduction of airspace closures by 30 percent, which is the current percentage of closures attributed to use of R-2203 by the 4/25 Airborne BCT. It is possible that airspace closure days for R-2203 could be lower than baseline conditions, or remain the same if increased use occurs by other JBER tenants/components or the public.

Reduced impacts in regards to competition for airspace use are anticipated from a decreased need of the 4/25 Airborne BCT to train under R-2203; however, the number of closure days for R-2203 could remain near baseline conditions if other users increase use of R-2203. Further analysis would be required to quantify the significance of these impacts.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be an anticipated minor impact to airspace as a result of the implementation of Alternative 2. The increased use of airspace would likely remain unchanged or could change with a negligible increase. Additional airspace would not be required, however, and scheduling, activation, and utilization of existing military airspace (SUA) would proceed as it currently does without change. Maneuver training of these ground-based units would have no effect to airspace at JBER. Additional airspace is not required to accommodate the types of ground-based maneuvers associated with the proposed growth.

***Live-fire Training*.** Increased training affecting R-2203 at JBER-Richardson and R-2202 at DTA would not require new airspace designations or a modification of existing airspace under this Proposed Action, although it would require active management of range. Increased airspace closure days would not occur because range managers would maximize use of existing training areas and ranges to avoid any increased closures of airspace. For example, increased use of the ERF Impact Area by the additional infantry battalion is estimated at 30 percent, but the number of closures for R2203 is not anticipated to increase. Past data indicates that often scheduled airspace is not fully utilized and returned to the public and private use.

However, even if increased activation of restricted areas was necessary, the amount of unused flight hours suggests that increased activation would not adversely affect airspace availability or

use. Increased maneuver training would have no effect to airspace at JBER-Richardson for the same reasons explained in Live-Fire Training as a result of this alternative (active management of ranges).

Significant impacts are not anticipated to affect the availability, use, designation, and/or management of airspace on JBER or DTA. No impact is anticipated from increased throughput on ranges and training areas so long as cooperation between competing users continues to facilitate joint use of airspace.

4.10.4 Cultural Resources

4.10.4.1 Affected Environment

The ROI for this VEC is areas within JBER and adjacent areas holding the potential to have cultural resources, which may be affected by this Proposed Action.

Several cultural resource studies, archeological surveys, and consultations with Native Alaskans have resulted in discoveries of prehistoric resources, historic properties, and/or sites with traditional, religious or cultural significance at JBER-Richardson. However, certain areas within JBER-Richardson were excluded from past archaeological inventories in the former FRA ICRMP because of mission considerations (including hazards), low site potential, or low potential for mission impact. Therefore, the following areas are not included in these past studies and surveys for JBER-Richardson:

- The ERF Impact Area;
- The Alpine Tundra zone;
- Wetlands, including freshwater and saltwater marshes, bogs, and lakes that are often covered by standing water. This does not include riparian areas along drainages; and
- Cantonment developed area; however, some isolated portions of the cantonment area near Ship Creek and Camp Carroll are comparatively undisturbed.

However, five areas within JBER-Richardson have a high potential to contain archaeological resources through the use of predictive modeling (U.S. Army, 2008). The five areas are the mouth of Eagle River; the shoreline of Knik Arm; upstream portions of Ship Creek; the Fossil Creek drainage; and the Elmendorf Moraine (U.S. Army, 2008). The Elmendorf moraine is generally located north of the cantonment areas and south of the ERF Impact Area (USACE, 2000).

A recent cultural resources desk survey and probability analysis was conducted for JBER to consolidate and analyze existing information based on past studies completed for the former Elmendorf Air Force Base and former FRA. Of the known cultural resource sites evaluated, the majority of known sites on JBER are military (World War II and Cold War) and are located within and/or near the cantonment areas within JBER (JBER, 2011b). Other sites include Alaska Native (prehistoric and historic), homestead-era, and unknown sites, which are located further out from the cantonment area (JBER, 2011b). Areas with low probability for encountering cultural resources are those areas that have been significantly disturbed or exhibit natural features that are typically restrictive to human activity (e.g., slope of land more than 40 percent) such as cantonment areas, along roadways, and within wetlands and waterways (JBER, 2011b). Areas with a medium probability for encountering cultural resources are those areas containing geological features that often attracted human activity, but that have likely experienced modern disturbance, such as the areas north of the cantonment areas, but south of the ERF Impact Area and along the northeastern portion of the installation boundary (JBER, 2011b). Areas with a high probability of encountering cultural resources include geologic features in close proximity to resources that do not appear to have been disturbed and also

include areas of unknown probability, such as areas along Eagle River, near the western edge of JBER, north of ERF Impact Area, and in the area between ERF Impact Area and the JBER-Elmendorf cantonment area along the western border of the installation (JBER, 2011b).

Ongoing and new construction (already planned but not funded) at JBER is located within or in close proximity to the cantonment areas, which correlates to areas of low probability to encounter cultural resources. The ranges and/or training areas used by the 4/25 Airborne BCT that have the potential for medium to high probability of encountering cultural resources are located in the northern part of the installation (PACAF, 2012). Approximately 30 percent of JBER land has been surveyed for archaeological resources (Scudder, 2012).

Despite the findings of past studies and surveys, coordination with the JBER CRM should be conducted prior to any work as the boundaries between low-medium-high probability areas is not clearly defined. For example, the areas near the cantonment area are low probability areas, but the Elmendorf Moraine is located just north of the cantonment area and has been previously stated to be in an area with a high potential to contain archeological resources.

In addition, all major projects on historic or historic-eligible buildings require the approval of the SHPO (Scudder, 2011). SHPO approval is also required for demolitions of any permanent building, even non-historic (Scudder, 2011). As a result of coordination or consultation, cultural resource surveys and/or archeological surveys may be required for projects where more information is needed and/or as a mitigation measure.

There is one historic district on JBER that is listed on the NRHP, which is the Nike Site Summit Historic District. Nike Site Summit is located on the eastern edge of JBER-Richardson and shown in Figure 4.10-2. In addition, there are three historic-eligible districts on JBER-Elmendorf – Alaska Air Depot, General's Quarters, and Flight Line. Although not managed under the NHPA, historic-eligible buildings are still treated as if they were listed on the NRHP by U.S. Air Force regulation (Scudder, 2012). The location of these districts is shown on Figure 4.10-3.

JBER is currently in the process of evaluating the buildings within the cantonment area to determine the potential eligibility of a Cold War historic district based on the findings of a Cold War Historic Context report (USARAK, 2003).

4.10.4.2 Environmental Consequences

No Action Alternative

Impacts to cultural resources under the No Action Alternative are significant but mitigable. Activities with the potential to affect cultural resources are routinely monitored and regulated in accordance with the JBER ICRMP through the cultural resource management program.

Cantonment Construction. Ongoing and new construction including renovations, maintenance, and demolitions would continue, but generally be limited to the cantonment area and/or previously disturbed areas of the base where the probability of encountering cultural resources is low. However, care should still be taken when doing work in the cantonment area due to the presence of historic/historic-eligible buildings. For example, doing construction within and/or adjacent to these buildings can cause direct damage to these resources from the operation of heavy equipment or during demolition of nearby facilities (e.g., indirect impacts from vibration). Despite consultation/coordination efforts, there still is the potential to affect historic property adversely during subsurface work. Such incidents could implicate other cultural resource protection laws such as the NAGPRA.

In all cases, the potential to affect cultural resources exists and could be significant but mitigable. Coordination with the JBER CRM would precede any work.

Range Maintenance. Maintenance (e.g., use of vehicles for grading and regrading) could unearth unknown cultural resources because some ranges and training areas that would be used by the 4/25 Airborne BCT are located in areas that have a medium to high probability of encountering cultural resources. Even though maintenance operations would be confined to previously disturbed areas (e.g., existing roads), the potential to affect unknown subsurface cultural resources still exists and could be significant if adversely affected.

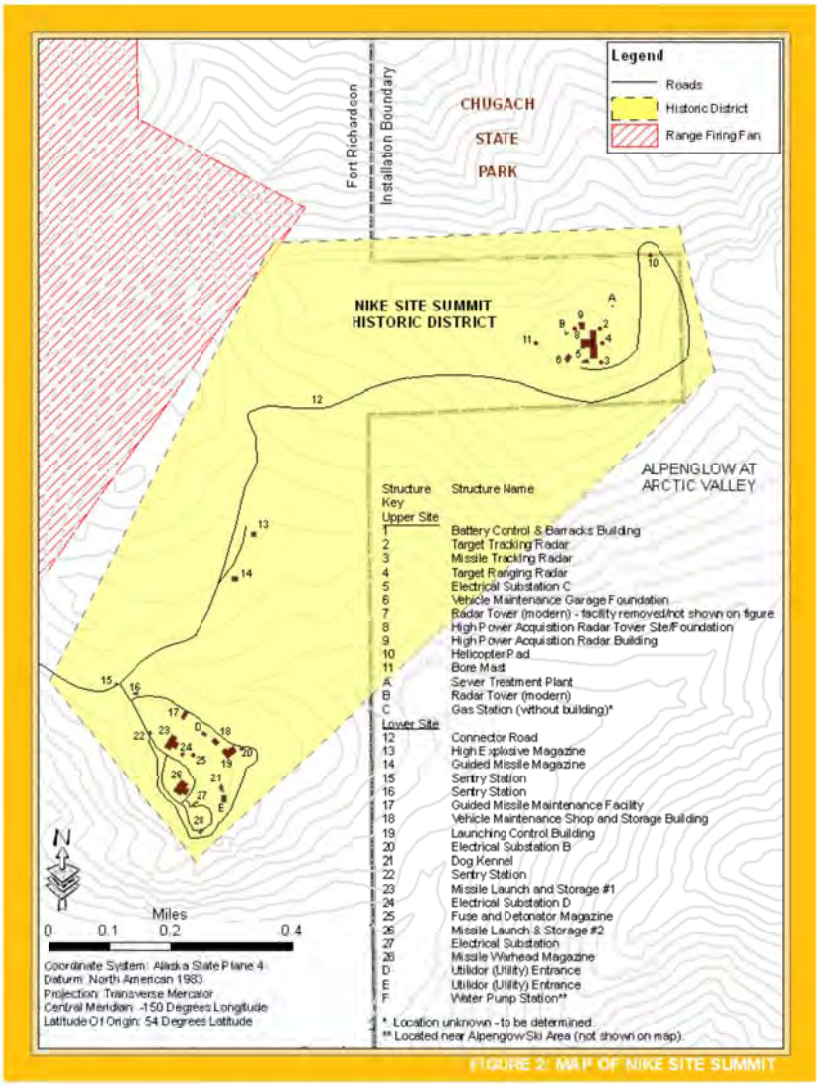
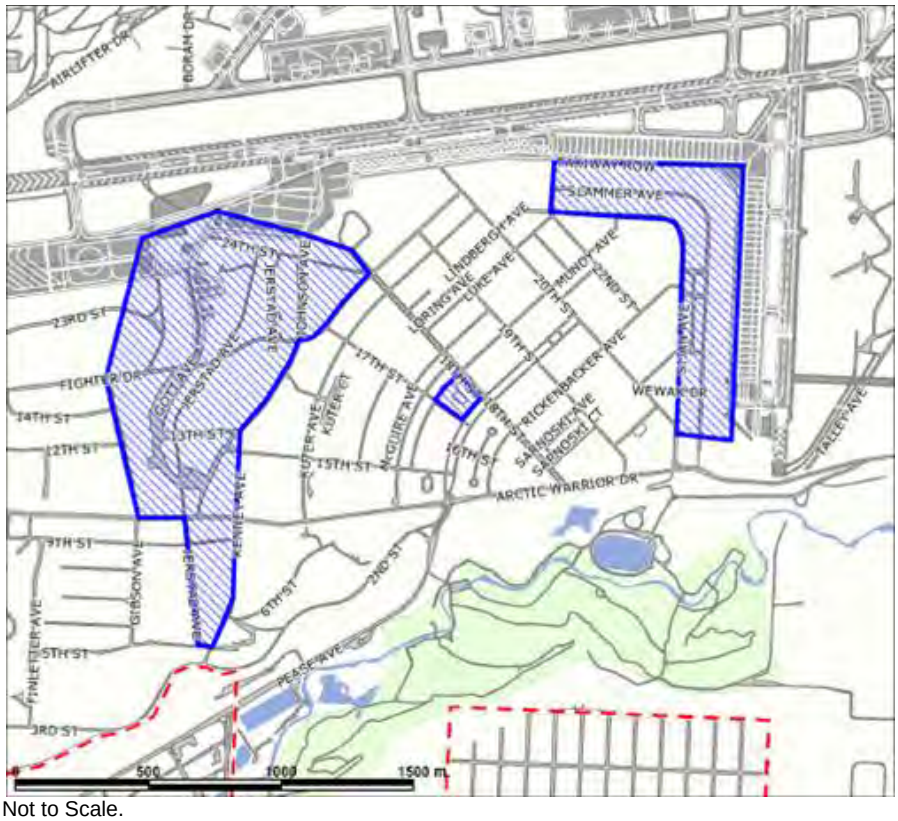


FIGURE 2: MAP OF NIKE SITE SUMMIT

Not to Scale.
Source: Final Finding of No Significant Impact and Environmental Assessment, Management of Nike Site Summit, Fort Richardson, Alaska (U.S. Army Garrison, Alaska February 2008).

Figure 4.10-2. Nike Site Summit Historic District



Not to Scale.
Source: PACAF 2011.

Figure 4.10-3. Historic Eligible Districts on Joint Base Elmendorf-Richardson - Elmendorf

A large portion of the northern part of JBER-Richardson has been surveyed; care should be taken when working in the southern part of JBER-Richardson and near the Elmendorf Moraine, which is north of the cantonment area, but south of the ERF Impact Area.

***Live-Fire Training*.** All the areas used for live-fire training have been surveyed for cultural resources. Continued use of existing areas for live fire is not likely to affect cultural resources as training would generally be limited to above-ground activities; however, the possibility remains to discover unknown cultural resources because ranges and training areas are located within an area with a medium to high potential to encounter cultural resources and not all portions of these areas have been previously disturbed.

***Maneuver Training*.** Unknown cultural resources could be impacted through the use of vehicles for maneuver training; however, the potential for this remains low since maneuver training occurs on existing roads and trails, which are areas with a low probability of encountering cultural resources. Large unit maneuver exercises (company level and above) would continue to occur at DTA or other USAG Alaska training sites. The potential exists to inadvertently affect cultural resources.

Detonation of explosives would disturb subsurface resources. In using existing demolition areas, e.g., Demo II/III, and alternative areas (where noise impacts require alternative locations), care should be taken to avoid areas with medium or high potential for encountering cultural resources that have not been previously surveyed. Coordination with the JBER cultural resource program, prior to demolition training, would avoid adverse impacts to known cultural resources and minimize impacts to unknown cultural resources.

Significant but mitigable impacts could occur if known or unknown cultural resources are adversely affected during construction, range maintenance, and/or training activities. Despite the low-medium-high potential areas where activities may be occurring there still is a risk of inadvertently discovering unknown cultural resources. However, advance coordination with the JBER cultural resources program could minimize potential impacts.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Significant but mitigable impacts are anticipated with this alternative at JBER. Despite the reduction in force, the potential to adversely affect cultural resources remains a risk as cantonment construction and demolition would continue. Building demolition, solid waste disposal, site recapitalization, and repurposing of existing facilities to assist the Army in efficiently managing its infrastructure and operating costs could potentially disturb or damage cultural resources, or could alter properties and districts. Demolition of facilities within JBER's current historic district may result in an adverse effect. NHPA Section 106 consultation would be required. Any demolition or repurposing activity occurring adjacent to the historic district and/or National Historic Landmark (NHL) may also require additional Section 106 consultation. JBER would avoid potential impacts to cultural resources during planning for potential cantonment area modification. If impacts cannot be avoided, measures to minimize or mitigate adverse impacts to cultural resources would be implemented through the NHPA Section 106 consultation process. All activity associated as a result of the implementation of this alternative would occur on previously disturbed ground. Thus, adverse impacts to other cultural resources are unlikely.

JBER would avoid potential impacts to cultural resources during facility planning. If impact could not be avoided, measures to minimize or mitigate adverse impacts to cultural resources would be implemented through the NHPA Section 106 consultation process. The frequency and intensity of maneuver training would decrease as a result of the implementation of Alternative 1. Under this alternative, all remaining maneuver training would be conducted within the footprint of existing ranges and trails at JBER. Any impacts resulting from maneuver training to undocumented cultural resources currently not identified; however, would be reduced given the lower amount of Army training occurring as a result of Alternative 1.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

This level of growth on JBER is anticipated to have a significant but mitigable impact to cultural resources. Measures are in place to accommodate training to prevent adverse impacts to cultural resources. The types of training conducted by the additional Soldiers would not change, though some training areas on JBER might be used with more frequency or intensity compared with current baseline conditions. The JBER CRM would continue to follow the procedures outlined in the ICRMP in order to protect cultural resources.

JBER would likely construct additional facilities to support additional Soldiers as a result of the implementation of this alternative. The 4/24 Airborne BCT currently does not occupy historic or historic-eligible buildings on JBER, although construction activities to augment BCT facilities could require consultation with the SHPO.

JBER would avoid potential impacts to cultural resources during planning for potential cantonment construction. If impacts could not be avoided, measures to minimize or mitigate adverse impacts to cultural resources would be implemented through the NHPA Section 106 consultation process. All construction associated with Alternative 2 would occur on previously disturbed ground. Thus, adverse impacts to other cultural resources are unlikely.

Construction of additional training ranges, if required, would involve grading and re-grading site surfaces, grubbing vegetation, and using heavy equipment to excavate the subsurface during new range infrastructure construction. Expansion of some ranges may be required. Although range expansion projects would be located on previously disturbed ground, construction activities have the potential to result in damage to yet-to-be discovered cultural resources. JBER would avoid potential impacts to cultural resources during planning for potential range infrastructure construction. If impact could not be avoided, measures to minimize or mitigate adverse impacts to cultural resources would be implemented through the NHPA Section 106 consultation process.

Negligible impacts from live-fire training are anticipated. Range expansion and new targetry would be sited to avoid cultural resources at JBER following identification of these sites during cultural resource surveys. The frequency and intensity of maneuver training would slightly increase as a result of the implementation of Alternative 2. As a result of this alternative, all maneuver training would be conducted within the footprint of existing ranges and trails at JBER. However, undocumented cultural resources currently not identified could be impacted through maneuver training. Stationing scenarios involving Combat Support units, particularly engineer or combat engineer units, may involve some surface excavation, which could potentially uncover or damage undocumented cultural resources. If impact could not be avoided, measures to minimize or mitigate adverse impacts to cultural resources would be implemented through the NHPA Section 106 consultation process. Increased maneuver training would occur in low probability areas for encountering cultural resources, although the potential still exists to inadvertently affect cultural resources.

Demolition Training. As discussed under the No Action Alternative, potential adverse impacts could result from demolition training. Increased training may result in increased opportunities to encounter unknown cultural resources, especially if demolition exercises are conducted at alternative locations that have not been previously surveyed or disturbed (e.g., locating training area, for the purpose of avoiding noise impacts, into the Knik Arm).

In summary, potentially significant but mitigable impacts could occur with the implementation of Alternative 2. Increased construction and training activities would occur which would tend to result in increased opportunities to potentially affect cultural resources. However, advance coordination with the JBER cultural resources program could minimize potential impacts to less than significant levels.

4.10.5 Noise

4.10.5.1 Affected Environment

The ROI for this VEC is JBER and the surrounding communities and environment (e.g., Knik Arm) that may be affected by noise generated at JBER.

The main sources of noise at JBER-Richardson are traffic, live fire from small and large caliber weapons, and demolition exercises. Localized noise sources (e.g., construction activity) typically extend no more than 0.5 miles from the noise source where high intensity blast noises may extend a few miles beyond the noise source (JBER, 2010a).

The standard metric for noise is the dB, which is a measure of sound loudness derived from a comparison sound pressure with a reference pressure (e.g., sound levels in air are referenced to 20 micro-Pascals (µPa) (re 20 µPa) and sound levels in water are referenced to 1 µPa) (JBER, 2011a). The A-weighted decibel (dBA) simulates noise response by the human ear whereas the C-weighted frequency (dBC) better represents impulsive noise as would occur as a result of artillery/mortar/demolition training; dBC accounts for low frequency noise that are deemphasized under the A-weighting scale (JBER, 2011a). Un-weighted sound levels are

typically used when the responsiveness of the noise receptor to noise is variable or not well understood and is often used when assessing noise impacts on marine mammals (JBER, 2011a).

Average noise exposure over a 24-hour period is often presented as a DNL (JBER, 2010a). The average DNL is the primary descriptor for military noise, except small arms noise, which uses the peak sound level. A-weighted DNL (ADNL) is used to estimate noise around airfields and C-weighted DNL (CDNL) is used to estimate low frequency noise (e.g., mortars/artillery). Peak noise (PK15) represents the single loudest noise event during a noise-producing event as is used to assess impacts on marine mammals and small arms noise. Noise levels established by the Army are presented in Table 4.10-7.

Table 4.10-7. Noise Limits for Noise Zones

Noise Zone	Noise Limits (Decibels)	Noise Limits (Decibels)	Noise Limits (Decibels)
	Aviation ADNL	Impulsive CDNL	Small Arms – PK 15 (met)
LUPZ	60-65	57-62	N/A
I	<65	<62	<87
II	65-75	62-70	87-104
III	>75	>70	>104

Source: AR 200-1.
ADNL=A-weighted day-night levels; CDNL=C-weighted day-night levels; dB=decibel; LUPZ=land use planning zone; N/A=Not Applicable; PK 15(met)=Single event peak level exceeded by 15 percent of events; <=less than; >=greater than.

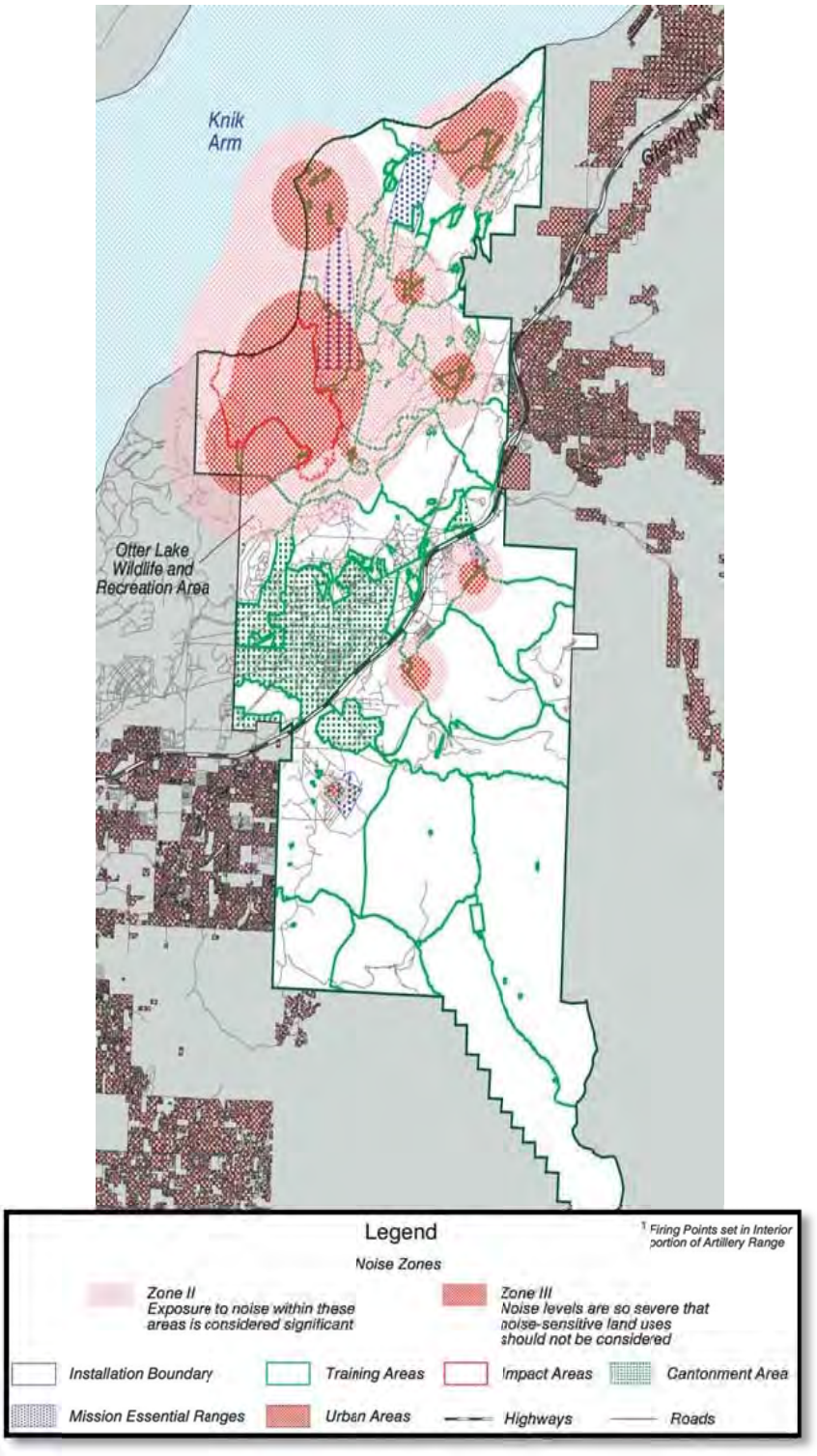
Noise sensitive land uses (e.g., residential and educational) are acceptable within areas identified as LUPZs or NZ I whereas noise-sensitive land uses should not occur in NZ III and in NZ II only if special noise reducing acoustics are implemented into the design of buildings in the area. NZ III is incompatible with most land uses (AR 200-1, Environmental Protection and Enhancement (2007); (JBER, 2010a).

Noise associated with construction equipment generally produce noise levels of 80 to 90 dBA at a distance of 50 feet from the source (U.S. Army, 2008a). The zone of relatively high construction noise may extend to distances of 400 to 800 feet from major equipment operations (U.S. Army, 2008a).

Noise contours associated with large and small caliber weapons and demolition operations have been previously estimated and are shown on Figure 4.10-4.

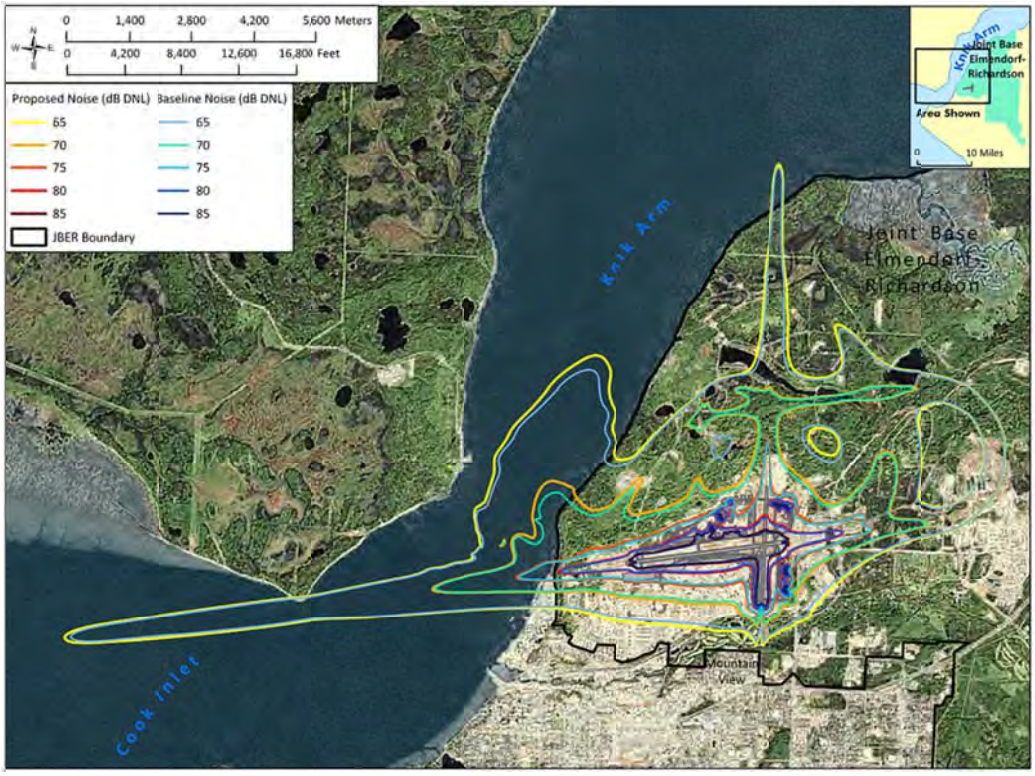
As illustrated, NZ III (dark pink area on Figure 4.10-4) is contained mostly within the installation boundary, and does not overlap with residential areas (both on and off post). NZ II (light pink area on Figure 4.10-4) affects the northern portion of the cantonment area and parts of the Otter Lake Wildlife and Recreation Area. However, both NZs II and III overlap a portion of the Knik Arm at Eagle Bay from use of ERF Impact Area and demolition operations.

Noise contours associated for F22 aircraft recently assigned to JBER are shown on Figure 4.10-5. The noise contours indicate that noise impacts equivalent to NZ II and III extend into portions of the Knik Arm, but do not extend into the southern communities, such as Mountain View. Noise impacts with the exposure level of 80 DNL (risk of hearing loss possible) are all located on JBER near the flight line and are unlikely to cause unacceptable noise levels (JBER, 2011a). Hearing conservation measures are in place at the flight line for workers in accordance with occupational noise exposure laws and regulations (JBER, 2011a).



Note: Not to Scale.
Source: Transformation of U.S. Army Alaska Final Environmental Impact Statement (USARAK, 2004)

Figure 4.10-4. Noise Contours at JBER-Richardson



Source: JBER, 2011a.

Figure 4.10-5. Baseline Noise Contours at Joint Base Elmendorf-Richardson-Elmendorf Airfield

Noise impacts extending into the Knik Arm have the potential to affect the endangered Cook Inlet beluga whale (beluga). Noise has been identified as having the potential to disturb the species (NOAA, 2008).

Overflights of Knik Arm by F22 aircraft were estimated to generate water sound pressure levels up to 137 dB re 1 µPa (duration of a few seconds) and potentially result in behavioral harassment of the beluga. An assessment of the magnitude of the potential number of annual harassments yielded a *de minimis* number of events (0.04 behavioral harassment events annually). Based on this analysis, the NMFS determined that this increase is unlikely to adversely affect the beluga whale (JBER, 2011a).

Consultation under the ESA and MMPA is required for projects that may affect the beluga because the beluga is protected by both statues. Under the MMPA, "take" may occur as a result of species harassment. To evaluate the potential for harassment by noise, National Oceanic and Atmospheric Administration Fisheries uses conservative thresholds of received sound pressure levels from broad band sounds that may cause behavioral disturbance, which is summarized in Table 4.10-8.

Table 4.10-8. National Oceanic and Atmospheric Administration Fisheries Current In-Water Acoustic Thresholds (excluding Tactical SONAR and Explosives)

Criterion	Criterion Definition	Threshold
Level A	PTS (injury) conservatively based on TTS	190 dB_{rms} for pinnipeds 180 dB_{rms} for cetaceans
Level B	Behavioral disruption for impulsive noise (e.g., impact pile driving)	160 dB_{rms}
Level B	Behavioral disruption for non-pulse noise (e.g., vibratory pile driving, drilling)	120[1] dB_{rms}

Source: NMFS, 2012.
All decibels referenced to 1 micro Pascal (re: 1µPa). Note all thresholds are based off root mean square (rms) levels.
[1]The 120 db threshold may be slightly adjusted if background noise levels are at or above this level.

For impulsive sounds such as the firing and detonation of mortars and artillery, NMFS sets forth a 180 dB root mean square sound pressure level as the threshold for Level A take of whales and 160 dB root mean square sound pressure level as the Level B threshold for take or harassment of marine mammals in general (JBER, 2011a). Current efforts are underway to evaluate potential noise impacts to the beluga whale and other marine mammals from operations/training conducted on JBER.

The current use of the ERF Impact Area is restricted to conditions set forth in the 1991 *Environmental Assessment for the Resumption of Firing in the ERF Impact Area* under Alternative C, which avoids use of the ERF Impact Area during times when migratory birds and/or belugas are usually within the area of the ERF Impact Area–Eagle Bay of the Knik Arm and/or Eagle River. Firing is limited to the use of 60mm, 81mm, and 120mm mortar rounds and 105mm howitzer artillery rounds during winter conditions when ice covering the impact area is a certain thickness of 2 inches or more for 60mm and 80mm and 5 inches or more for 105mm.

Efforts are underway to expand the use of the ERF Impact Area to the summer in addition to the winter. Because belugas would be located in close proximity to the ERF Impact Area and/or within Eagle River in the summer, the Army has proposed habitat protection buffers in the Draft Resumption of Year-Round Firing Opportunities (RYFO) EIS to ensure that use of permissible weapons does not affect the beluga whale under the ESA/MMPA. The RYFO EIS is an ongoing effort and the Final EIS is anticipated to published in 2012. Consultation under the ESA/MMPA is underway. More information on this effort may be found in the Draft RYFO EIS and in Appendix D therein, available at http://www.jber.af.mil/environmental/epc/deis.asp (last accessed November 5, 2012).

As previously stated, the 4/25 Airborne BCT accounts for 30 percent of closures of R-2203, which equates to 20 days a year that the 4/25 Airborne BCT may use the ERF Impact Area. Consultation would be required for Alternative 2 to ensure compliance with the ESA/MMPA as Alternative 2 would result in increased training at JBER.

4.10.5.2 Environmental Consequences

No Action Alternative

The implementation of the No Action Alternative would result in minor noise impacts from aviation, field artillery firing, and live-fire and maneuver training. Noise-generating activities would occur with no change to current frequencies or intensities of noise-generating activities.

***Cantonment Construction*.** No impact on beluga and other marine mammals and/or off-post communities are anticipated from construction operations within the cantonment area. Since the source of noise from construction-related equipment would be within the cantonment area, the marine mammals within the Knik Arm and/or communities off post would not be within the 0.5 miles of the noise source to be affected. Construction workers near the flight line could be exposed to high noise levels (at or above 80 dBA), although hearing conservation measures could mitigate against this impact. Even if the noise from construction did extend off post, it is likely that such noise would be consistent with background noise that may be generated by the Alaska Railroad and the Glenn Highway, which forms the southern boundary of JBER-Elmendorf and bisects JBER-Richardson. No impacts are anticipated to surrounding communities or residential areas within the cantonment area at levels that present a risk of hearing loss from noise resulting from construction in the cantonment area.

Range Maintenance. No impact on beluga and other marine mammals and/or off-post communities are anticipated from range maintenance operations. Maintenance of existing ranges and training areas would continue with similar noise impacts as Cantonment Construction, although these noise impacts would likely occur in the undeveloped portions of the base where humans are not usually present. Wildlife, such as moose or birds, in these areas could be subject to high noise impacts near the noise source; however, since maintenance in these areas is reoccurring, the wildlife that remains in these areas may be adapted to the infrequent maintenance operations that occur on an as-needed basis. Ranges and training areas where maintenance operations occur are not known to contain marine mammals. No regular maintenance operations are carried out at the ERF Impact Area, where both belugas and harbor seals have been observed.

Live-Fire Training. Current efforts are underway to evaluate potential noise impacts to the beluga whale and other marine mammals to ensure compliance with the ESA/MMPA. Live-fire training would continue at the ERF Impact Area under current restrictions. Noise impacts to the surrounding community would continue to be within acceptable levels. However, this information should be reviewed upon completion of the current NEPA efforts assessing noise impacts on JBER.

***Demolition Training*.** Current efforts are underway to evaluate potential noise impacts to the beluga whale and other marine mammals to ensure compliance with the ESA/MMPA. Noise impacts to the surrounding community would continue to be within acceptable levels. However, this information should be reviewed upon completion of the current NEPA efforts assessing noise impacts on JBER.

Significant impacts are not anticipated from continuing current operations; however, new information may be developed under other JBER NEPA efforts. Therefore, this section should be updated with the findings of other NEPA efforts as information becomes available.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Impacts from noise are anticipated to be beneficial under Alternative 1. Existing ranges would still be utilized for firing the same types of weapons systems and conducting the same types of training. As a result of the implementation of Alternative 1; however, JBER would experience an anticipated reduction in the frequency of noise generating training events. The number of weapons qualifications and maneuver training events could be anticipated to decrease. Noise impacts would likely remain comparable to current conditions, though less frequent leading to a reduced risk of noise complaints.

Impacts from building demolition, site recapitalization, and the repurposing of existing facilities to accommodate different Army needs would temporarily increase noise. Both construction and

demolition activities would result in the use of similar equipment that has the potential to generate similar levels of noise.

The force reduction would decrease the need for live-fire training at existing ranges, which would likely result in decreased noise impacts to below baseline conditions by up to 30 percent (assuming that the 4/25 Airborne BCT activation of R-2203 is for use of the ERF Impact Area); however, the ERF Impact Area would continue to be used for mortar and artillery training by remaining Army Soldiers under current restrictions. The reduction in force would decrease the need for maneuver training at existing ranges, which would likely result in decreased noise impacts to below baseline conditions.

Current efforts are underway to evaluate potential noise impacts to the beluga whale and other marine mammals from operations/training conducted on JBER. Results of these efforts may affect operations/training under this Alternative.

Reduced impacts are anticipated from lesser potential to generate noise that could affect both humans and wildlife as noise would likely decrease to below baseline conditions. Further analysis would be required to quantify the significance of these impacts.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be an anticipated less than significant impact on the installation and surrounding communities by the restationing of up to 1,000 Combat/Combat Support Soldiers. There would be temporary minor impacts resulting from additional garrison construction. Noise associated with construction would result mainly result from the movement of vehicles and use of construction equipment. Noise associated with construction equipment generally produce noise levels of 80 to 90 dBA at a distance of 50 feet. Permissible noise exposures identified by the Occupational Safety and Health Administration (OSHA) (29 CFR 1910.95) for an 8-hour work day is 90 dBA. Therefore, construction noise in the cantonment area would likely be compliant with these levels. The zone of relatively high construction noise may extend to distances of 400 to 800 feet from major equipment operations; and those locations that are more than 1,000 feet from construction sites generally do not experience significant noise levels. Current programmed yet unfunded construction includes the need to demolish outdated structures. It is possible that JBER may not presently be able to accommodate the increase in Soldiers under the current demolition/consolidation plan and the requirement to accommodate this increase may result in retaining structures that are presently slated for demolition. As compared to the No Action, the nature of the construction work may change from demolition to retention and modification of outdates buildings; however, in either case the noise impacts would likely be similar as the noise to result from demolishing an old buildings would not differ substantially from the noise to construct a new building or modify an existing building. No impacts are anticipated to surrounding communities or residential areas within the cantonment area at levels that present a risk of hearing loss as a result of cantonment construction.

***Live-Fire Training*.** Less than significant impacts are anticipated to occur; however, consultation would be required for Alternative 2 to ensure compliance with the ESA/MMPA as Alternative 2 would result in increased training at JBER. Since ranges and training areas would not be expanded or the number of live-fire closure days for R-2203 would not increase, the additional Soldiers would have to share existing training areas. The addition of 1,000 Soldiers could result in increased use of mortars and artillery at the ERF Impact Area. Potential noise impacts would generally be consistent with ongoing live-fire training. It is anticipated that increased training requirements would result in increased duration of training events and training days. Noise impacts would likely remain within acceptable limits as no new training areas and ranges would be developed and no new weapons would be used. However, this

information should be reviewed upon completion of the current NEPA efforts assessing noise impacts on JBER.

***Demolition Training*.** Significant impacts are not anticipated from continuing current operations; however, new information may be developed under other JBER NEPA efforts. Therefore, this section should be updated with the findings of other NEPA efforts as information becomes available.

***Maneuver Training*.** Although there would be an increase in Soldiers maneuvering, the type of noise would be consistent with ongoing maneuver activities. The increased frequency of noise generating events would correspond to the increased maneuvers associated with these stationing scenarios, an estimated 10 to 20 percent increase. The noise effects that would be produced from convoy travel on public roads (when traveling between installations and maneuver sites) would be short term as these activities are intermittent and are usually mitigated through SOPs for convoy maneuver. Frequency of noise impacts along on-post roadways and along military vehicle trails would increase. In addition, the noise produced from convoy travel on public roads (when traveling between JBER-Richardson and DTA) would be short term as these activities are intermittent and are usually mitigated through SOPs for convoy maneuver (U.S. Army, 2008a). Convoys normally maintain a gap of 15 to 30 minutes between serials (a group of military vehicles moving together), 330 feet between vehicles on highways, and 7.5 to 15 feet while in town traffic. These procedures are followed to minimize the noise and traffic impacts to the public (U.S. Army, 2008a). No impacts are anticipated to surrounding communities or residential areas within the cantonment area at levels that present a risk of hearing loss as a result of maneuver training.

Less than significant impacts are anticipated for the implementation of Alternative 2. Although increased frequency of noise may occur as a result of Alternative 2, the intensity of noise would remain the same provided Range Managers ensure increased throughout is spread out over available training days to minimize and avoid an increase in the intensity of noise impacts. Further analysis would be required to quantify these impacts. In addition, consultation would be required for Alternative 2 under this Proposed Action to ensure compliance with the ESA/MMPA as Alternative 2 would result in increased training at JBER.

4.10.6 Soil Erosion

4.10.6.1 Affected Environment

The ROI for this VEC is JBER and the surrounding areas which may be affected by impacts to soil resources from increases or decreases in Army training.

JBER-Richardson lies in the Cook Inlet–Susitna Lowland and Kenai–Chugach Mountains physiographic provinces on an alluvial plain called the Anchorage Lowland (U.S. Army, 2008a). The Anchorage Lowland is characterized by rolling hills with up to 250 feet of topographic relief in the eastern portion along the Chugach Mountains with the terrain flattening to the west into an alluvial plain that is inundated with broad, shallow streams and wetlands. JBER-Richardson contains many landforms that are characteristic of glaciated terrain, including moraines, esker deposits, outwash plains, and estuarine sediments (U.S. Army, 2008a). The topography of the Anchorage Lowland has been primarily influenced by glacial activity and alluvial deposition and erosion by the four major drainages that originate in the Chugach Mountains Eagle River, Ship, Campbell, and Chester creeks. JBER-Richardson is covered by Quaternary age glacial, glacio-marine (estuarine), and glacio-alluvial sedimentary deposits, with bedrock outcrops occurring in the south and east along the Chugach Mountains. The most common surficial deposits are: end moraine, ground moraine, lateral moraine, glacioalluvial, alluvial, and alluvial fan, estuarine, and lacustrine (USACE, 2000). The soils have formed on glacial moraines, outwash, tidal flats

and peat bogs, which contributes to a wide variety of engineering properties and soil types (U.S. Army, 2008a).

The Elmendorf Moraine is located just north of the cantonment area and continues along the north edge of JBER-Elmendorf (USACE, 2000). Ponds and bogs are widespread in this area (USACE, 2000). This is consistent with wetlands being present north of the cantonment areas (PACAF, 2012). Sediments beneath the cantonment area are at least 229 to 295 feet thick (USACE, 2000). Based on well logs, the thickness of sediments below the cantonment ranges from 230 to 322 feet (U.S Army, 2008a).

The Bootlegger Cove Formation exists beneath JBER-Elmendorf and is exposed beneath the Elmendorf Moraine in coastal bluffs of the Knik Arm (USACE, 2000). This formation acts as a confining layer beneath Anchorage and JBER-Elmendorf, although its extent on JBER-Richardson is not known (USACE, 2000). It is suspected that this formation transitions on JBER-Richardson to an area of increased permeability and hydraulic conductivity (USACE, 2000). This is important in regards to groundwater quality, e.g., fate and transport of contaminants in groundwater.

In general, JBER-Richardson soils are primarily shallow, immature, and tend to be nutrient-poor, specifically of nitrogen, phosphorous, and potassium, which are the primary requirements for plant growth (JBER, 2010a). The soils also have low water retention capacity, creating limiting conditions for plant growth in dry periods (JBER, 2010a). In the wetland areas, the surface soil may be covered with peat (partially decomposed vegetation) (JBER, 2010a).

There is no prime farmland, unique farmland, or farmland of statewide importance designated for Alaska; however, Palmer, Wasilla, and Upper Susitna Soil and Water Conservation Districts have adopted criteria for Farmlands of Local Importance for lands within their District boundaries (USDA, 2012a).

JBER is located within an area that is classified as being outside of the permafrost regions of Alaska and/or generally free from permafrost (USDA, 2012b). Permafrost is present on less than 1 percent of JBER-Richardson, occurring primarily in patches of forested bogs along Muldoon Road, as well as in the higher elevations of the areas within the Chugach Mountains. The effects of thermokarst, e.g., the irregular subsidence of permafrost that causes mounds, hummocks, water-filled depressions, flooded forests, and mudflows on steeper slopes, have been less than 0.1 percent in the last 200 to 300 years in the JBER-Richardson area (USAG Alaska, 2010)

Erosion and sedimentation are natural processes that may be accelerated by disturbance of soils during construction, training, and wildfires on JBER. During construction, soil resources management is achieved through prevention activities by implementing BMPs in agreement with industry standard installation stormwater prevention techniques (see Section 4.10.9) (U.S. Army, 2008a).

Increased sedimentation has the potential to adversely affect the beluga and its critical habitat (Garner, 2011). For example, increased loading of soil in the water column of anadromous streams could negatively affect salmon productivity (Garner, 2011). Four species of Pacific salmon are identified in the Final Rule designating critical habitat for the beluga as a primary constituent element (PCE) necessary for its continued survival (Garner, 2011). At this time, sediment monitoring is not being conducted at JBER; however, the ITAM program on JBER-Richardson is focused on conserving and managing soil resources, which would minimize and avoid impacts to the beluga. Disturbed soils are restored by both erosion control and streambank stabilization activities, which control installation sources of dust, runoff, silt, and erosion debris to prevent damage to land, water, and air resources, equipment, and facilities

(including those on adjacent properties) (U.S. Army, 2008a). Soil monitoring is conducted through the Range and Training Land Assessment Program (RTLA), which is the monitoring component of ITAM. Annual RTLA reports detail the levels of current and past disturbance and land condition resulting from military training and recreational use on JBER-Richardson. RTLA reports were not readily accessible at the time of this PEA; however, JBER has undertaken stream bank restoration projects in recent years. In addition, BMPs employed on ranges and training areas within at JBER-Richardson may be found in *Range Complex and Training Land Upgrades Final Finding of No Significant Impact and Programmatic Environmental Assessment* (USAG Alaska, 2010).

Wildfire plays an important role in Alaskan ecosystems; however, fire generated by military training activities may cause unacceptable damage to critical vegetative cover that aids in stabilizing soils from wind and water erosion (U.S. Army, 2008a). Vegetation normally protects soil from erosion by slowing surface runoff, intercepting raindrops before they reach the soil surface, and anchoring the soil with roots (U.S. Army, 2008a). Vegetation loss could indirectly cause large-scale removal and redeposition of soils, gullying, or unstable slopes in areas of steep slopes and rapid runoff (U.S. Army, 2008a). In response to fires caused by military training, fuel maps were created indicating concentrations of fire-prone vegetation and areas recommended for hazard fuel reduction projects; these may be found in the Transformation EIS (USARAK, 2004).

Mineral resource extraction on JBER is limited to gravel. There are several gravel pits on JBER, which are located in close proximity to the cantonment area and JBER-Elmendorf Airfield (PACAF, 2012).

4.10.6.2 Environmental Consequences

No Action Alternative

Less than significant adverse impacts are anticipated under the No Action Alternative. JBER would continue its infantry and mechanized training, to include impacts to soils from removal of or damage to vegetation, digging activities, ground disturbance from vehicles, and ammunition or explosives used in training events. The installation's ITAM program conducts monitoring, rehabilitation, and maintenance and repair on areas of high use such as drop zones, artillery firing positions, observation points, and ranges.

Cantonment Construction. For the most part the cantonment area is already developed and/or the subsurface is previously disturbed by prior development, although soil resources could still be affected by construction, demolition, or renovation projects. The use of heavy equipment, for example, could disturb soil and result in localized fugitive dust, loss of vegetation (if it exists), potential risk of spills involving POLs, and compact soil in the construction area, making it difficult to support the future growth of natural vegetation while increasing the potential for soil erosion. There also exists the incidental effects of soil erosion and runoff on water quality as the stormwater management system on JBER-Richardson is not well developed (see Water Resources, Section 4.10.9), although strict enforcement of SWPPPs by JBER water program may negate this concern. Construction BMPs and stormwater management practices would mitigate against potential adverse effects. In the winter, impacts to soil resources would be minimized due to the protective cover that ice provides.

Natural erosion and sediment transport would continue to occur with construction activities being a contributing cause.

Range Maintenance. Impacts to soil could occur during maintenance activities. However, these activities would be focused on repairing wear and tear of existing ranges and training areas. Some of the ranges are located near wetlands and/or waterways, e.g., Ship Creek,

which could give rise to potential water quality concerns as a result of soil erosion. To avoid this issue, maintenance activities would avoid areas susceptible to soil erosion, e.g., adjacent to waterways, and stay on existing roads and trails. However, some soil erosion in these relatively undeveloped areas would occur by natural transport processes (e.g., precipitation and wind). In the winter, impacts to soil resources would be minimized due to the protective cover that ice provides. Natural erosion and sediment transport would continue to occur with maintenance activities being a contributing cause.

Live-Fire Training. Live-fire training would continue within the footprint of the existing ranges. However, weapons firing and demolition training can typically involve the disturbance of soils, denuding the soil surface of vegetation and increasing the erodibility of soils. Live-fire training may start wildfires, which would adversely affect soil resources, resulting in the potential inability of soils to sustain vegetation. Wildfire risk is higher for fires resulting from training as opposed to naturally occurring fires; however, the removal of fuels (e.g., dead vegetation) near these areas would minimize fires as a result of training. In the winter, impacts to soil resources would be minimized due to the protective cover that ice provides. Natural erosion and sediment transport would continue to occur with training being a contributing cause. Demolition training would disturb soil resources, although demolition operations are conducted in areas that are previously disturbed. However, if demolition training is moved to an alternative location due to the potential to impact the beluga from noise, new soil impacts may occur if the area is not previously disturbed; however, it is likely this area would be within an existing range and training area. Natural erosion and sediment transport would continue to occur with training being a contributing cause.

***Maneuver Training*.** Maneuver training would remain at current levels and within the footprint of existing maneuver areas. Soils would continue to be disturbed on existing, unpaved roads and trails. Since off-road maneuver training would not occur at JBER, the potential to affect additional surface area and undisturbed vegetated areas is not anticipated. In the winter, impacts to soil resources would be minimized due to the protective cover that ice provides. Natural erosion and sediment transport would continue to occur with training being a contributing cause.

In summary, less than significant impacts are anticipated from the continuation of current operations although adverse effects to soils resources are anticipated. Continued implementation of resource management plans and programs (e.g., the INRMP and ITAM) would continue to ensure soil erosion-related impacts caused by maneuver training would be less than significant.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Impacts from soil erosion are anticipated to be minor. Alternative 1 includes the reduction of no longer needed facilities that could result in short-term adverse impacts from demolition and temporary exposure of bare soils to rain, water and wind erosion. However, these impacts would be short term in duration. Exposed areas of soil after deconstruction would likely be reseeded with native species to reduce the impacts from fugitive dust. Consequently, minor soil erosion impacts from deconstruction activities at JBER are anticipated.

The number of required live-fire user days per year at JBER would drop below current levels. Weapons firing can involve the disturbance of vegetation and soils, which can cause increases in soil erosion rates. Implementation of the INRMP and ITAM program work plans and associated management practices along with additional soil erosion mitigation measures would continue. Consequently, impacts to soil erosion from a reduction in live-fire training would be negligible to minor impact as fewer opportunities for soil erosion would occur.

The intensity and frequency of maneuver training at JBER would also decrease below current levels. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at JBER. Implementation of the INRMP and ITAM program work plans and associated management practices along with additional soil erosion mitigation measures would continue. Consequently, impacts to soil erosion from a reduction in live-fire training would be minor.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Less than significant impacts are anticipated to soil resources at JBER resulting from the implementation of Alternative 2. Alternative 2 would involve the demolition of some facilities and construction of new facilities within the existing cantonment area resulting in short- and long-term minor impacts. Short-term impacts would occur as infill among existing structures within the main cantonment area where stormwater management practices may already be in place to mitigate potential adverse effects from sediment runoff. Fugitive dust may also occur; however, impacts from dust would likely be localized and not have any lasting adverse effects to nearby water bodies. Long-term effects could occur from the compaction of soils, reducing the likelihood for vegetation to re-establish itself and increasing the effects from wind erosion or precipitation. Soils transported away from the construction area may accumulate in gullies or to other areas where post-precipitation event water may carry sediments to other water bodies. Other direct long-term effects would include a change in soil function due to permanent modification of the area (construction of a building on top of previously undisturbed soil).

Range construction and expansion projects, if necessary, would have similar impacts to soils as would cantonment construction. Heavy construction machinery or vehicles would disturb the soil surface through excavation, digging of wheels into the surface media, and physically moving soils from place to place. Short-term effects would occur from soil transport and loading into nearby water bodies. Fugitive dust may also occur; however, impacts from dust would likely be localized and not have any lasting adverse effects to nearby water bodies. Due to the relatively high occurrence of surface water and wetlands at DTA, construction may need to occur in the wintertime to mitigate any adverse effects from soil transport. Long-term minor direct effects would occur from the loss of vegetation, exposing the soils beneath; and may also include the compaction of some soils making it difficult to support future vegetative growth; and permanent modification of soil function. The installation would continue to use existing construction BMPs to mitigate any potential effects.

Implementation of Alternative 2 would increase the frequency of live-fire activities on ranges, potentially causing a greater amount of soil disturbance. Weapons firing typically involves the disturbance of soils, denuding the soil surface of vegetation and increasing the erodibility of soils. JBER DPW staff monitor impacts from live-fire activities and would continue to institute the required mitigations and BMPs (such as berm revegetation and regrading) to minimize sediment migration off the firing ranges.

For Combat Support units, the use of ordnance or explosives could cause wildfires resulting in the removal of vegetation that normally protects soil from erosion. The presence of vegetation slows surface water runoff by intercepting raindrops before they reach the soil surface, and works to anchor the soil with roots. Without surface vegetation, the top layer of soils may be transported away due to natural processes, and the soil remaining may become compacted leaving little opportunity for vegetation to re-establish itself. Vegetation removal resulting from wildland fires could result in increased soil erosion by water and wind, indirectly causing large-scale removal and redeposition of soils, gullying, or unstable slopes in areas of steep slopes and rapid runoff. The impact would be directly proportional to the size of the fire. Fuel maps

were created indicating concentrations of fire-prone vegetation and areas recommended for hazard fuel reduction projects; these may be found in the 2004 *USARAK Transformation EIS*.

Units operating at impact areas in the summer can directly create craters and remove patches of vegetation, which normally protect soil from erosion by slowing runoff, intercepting raindrops before they reach the soil surface, and anchoring the soil. Compaction in the craters caused by larger ordnance explosions can alter the permeability and water-holding capacity of the soils affecting the ability of vegetation to recover in those areas. These direct impacts indirectly create large areas of bare ground and exposed soils that are susceptible to wind and water erosion, which can indirectly cause large-scale removal and redeposition of soils, gullying, or unstable slopes in areas of steep slopes and rapid runoff. Although weapons training events would be periodic, long-term impacts are anticipated because soil disturbance typically requires time and effort to amend.

The addition of 1,000 Soldiers may increase the frequency of maneuvers by 10 to 20 percent. The increase in maneuver frequency is anticipated to correlate with resulting damage to vegetation and disturb soils to an extent that would increase soil erosion rates and alter drainage patterns in the training areas. This could lead to gullying, and indirectly to downstream sedimentation, particularly when the vehicles travel off-road.

This scenario, which involves travel on existing roads and trails, is anticipated to lead to very limited new soil erosion impacts. However, activities associated with any Combat Support units could have adverse impacts to off-road areas that may include the use of heavy construction equipment and explosives to clear land and obstacles for training. Direct effects may occur from removal of vegetation and soil displacement or disruption. These activities may indirectly impact the permafrost layers.

Between JBER's main post and its training areas and at other maneuver areas in Alaska that can support Army unit maneuver training such as DTA, the installation has more than 1 million maneuver acres and is capable of handling brigade-level training; and more than capable of handling maneuvers associated with this alternative. At certain locations, the anticipated Maneuver Impact Mile requirement associated with Alternative 2 would slightly exceed the Maneuver Impact Miles summer capacity. Training requirements would be spread over a large number of like units resulting in a less than significant overall impact.

Training maneuvers in Alaska are often conducted more frequently in the winter months when the ground is frozen to reduce impacts from soil erosion and to water bodies. JBER has BMPs in place to avoid impacts to permafrost, these include avoiding areas where permafrost is known or thought to occur during warmer weather conditions, and the limitation of maneuvers over permafrost to wintertime when snow depth is sufficient enough to ensure an insulating layer can support maneuver while maintaining the integrity of the permafrost below.

During summer months, there is a great deal more open or standing water located on JBER. During the warmer seasons, the risk of sediment transport and loading to water bodies on the installation is much greater. In many areas, maneuver is reduced or restricted to minimize or eliminate effects of training to water and to the soils underlain with permafrost. The amount of land available on which to train is reduced, significantly in some areas, during the summer months.

Increased use of existing ranges and training areas would increase the need for maintenance of these areas and result in increased soil disturbance by an increased use of construction equipment in these areas. Increased throughput may require increased management efforts to avoid a substantial increase in impacts to soils and minimize the risk of fires.

Increased live-fire activities could lead to an increased deposition of munitions constituents in soils. Although there could be increased deposition of munitions constituents in soil as a result of increased mortar and artillery use under this alternative, the information presented in the Draft RYFO EIS and its supporting studies suggest that munitions loading in soils is not occurring so as to present a concern for soil resources at JBER.

Less than significant impacts resulting from an increase in 1,000 Soldiers at JBER are anticipated. Additionally, significant impacts to soil resources are not anticipated for the same reasons as explained under the No Action Alternative.

4.10.7 Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species)

4.10.7.1 Affected Environment

The ROI for this VEC is JBER and the surrounding communities/areas within the Municipality of Anchorage, e.g., Eagle River/Chugach State Park, which may be affected by biological impacts at JBER.

In accordance with the Sikes Act, wildlife and fish populations and their habitats are managed cooperatively by JBER, the Alaska Department of Fish and Game, and the USFWS, primarily through the INRMP process.

Wildlife and supporting habitat are abundant throughout JBER-Richardson and its surrounding areas, which include a variety of large mammals (including marine mammals); small mammals; amphibians; fish; and avian species including game birds, waterfowl, passerines, and raptors. For the most current complete list, see the Draft JBER 2012 INRMP. Army regulations prohibit the intentional targeting of wildlife, including marine mammals (e.g., beluga whales) that may be present in the Eagle River during live-fire training (USAG Alaska, 2010). Current management efforts at JBER are focused on the beluga, moose, large predators, waterfowl, and salmon. More information can be found in the 2010 JBER Interim INRMP (note: the 2012 JBER INRMP is in preparation). The JBER INRMP sets forth natural resources management programs and/or activities on JBER. The following information is focused on species that may be affected by the Proposed Action.

Endangered Species. Listings of candidate, threatened, and endangered species protected under the ESA that may be located at or near JBER are listed in Table 4.10-9.

Table 4.10-9. Threatened, Endangered, and Candidate Species Identified by U.S. Fish and Wildlife (2010) or National Oceanic Atmospheric Administration-National Marine Fisheries Service (2010) Suspected or Recorded in the Upper Cook Inlet Project Area

Common Name	Scientific Name	Endangered Species Status	Location Description
Beluga Whale (Cook Inlet Distinct Population Segment)	*Delphinapterus leucas*	Endangered	Occupies Cook Inlet waters and waters of North Gulf of Alaska . Found in Knik Arm waters to include lower Eagle River.
Steller Sea Lion[1] (Western Alaska Distinct Population Segment)	*Eumetopias jubatus*	Endangered	Includes sea lions born on rookeries from Prince William Sound westward (JBER, 2010c). Observed rarely in Knik Arm waters adjacent to JBER.

Table 4.10-9. Threatened, Endangered, and Candidate Species Identified by U.S. Fish and Wildlife (2010) or National Oceanic Atmospheric Administration-National Marine Fisheries Service (2010) Suspected or Recorded in the Upper Cook Inlet Project Area (Continued)

Common Name	Scientific Name	Endangered Species Status	Location Description
Steller's Eider[1]	*Polysticta stelleri*	Threatened	Occurs in northern and western Alaska. Not reported for JBER but observed rarely in Anchorage area.
Yellow-billed Loon[1]	*Gavia adamsii*	Candidate	Nest near freshwater lakes in the arctic tundra and winter along the Alaskan coast to the Puget Sound. One observation reported for Green Lake, JBER.
Kittlitz's Murrelet[1]	*Brachyramphus brevirostris*	Candidate	Nest near glaciers in rocky slopes near Gulf of Alaska waters, winters off shore in Gulf of Alaska. Not reported for Upper Cook Inlet.
Chinook salmon[1]: Lower Columbia River (spring) Puget Sound Snake River (spring/summer) Snake River (fall) Upper Columbia River (spring) Upper Willamette River	*Onchorhynchus tshawytshca*	 Threatened Threatened Threatened Threatened Endangered Threatened	These stocks range throughout the North Pacific. However, the specific occurrence of listed salmonids within close proximity to JBER is highly unlikely.
Steelhead[1]: Lower Columbia River Middle Columbia River Snake River Basin Upper Columbia River Upper Willamette River	*Onchorhynchus mykiss*	 Threatened Threatened Threatened Endangered Threatened	These stocks range throughout the North Pacific. However, the specific occurrence of listed salmonids within close proximity to JBER is highly unlikely.

Source: JBER, 2010c (internal citations omitted).
[1]May potentially move on or within close proximity to JBER but occur so infrequently that projects are anticipated to have negligible effect.

Marine Mammals. All marine mammals are protected by the MMPA and the following may occur near JBER: the beluga, Stellar sea lions, minke whale, gray whale, killer whale, harbor porpoise, and harbor seal (NMFS, 2010). Species protected under the MMPA that may be located at or near JBER are listed in Table 4.10-10.

Table 4.10-10. Upper Cook Inlet Species Protected by the Marine Mammal Protection Act

Common Name	Scientific Name	Location Description
Cook Inlet Beluga Whale	*Delphinapterus leucas*	Observed in Eagle Bay and Eagle River of the JBER Eagle River Flats Impact Area.
Killer Whale	*Orcinus orca*	Observations by NMFS from 1975 to 2002 indicate only occasions that killer whales were in Knik Arm; however, they are observed a few times a year in the rest of Cook Inlet (JBER, 2010c).
Harbor Porpoise	*Phocoena phocoena*	Considered infrequent occurrence in Knik Arm.
Harbor Seal	*Phoca vitulina*	Considered infrequent occurrence in Knik Arm, yet observations occur regularly at mouth of Eagle River.

Source: Griese, 2012.

Some marine mammals are also listed as threatened and endangered and are afforded protection under the ESA as well. The beluga is protected under the ESA and MMPA. The beluga was listed as an endangered species on October 2008 and its critical habitat was designated in April 2011. The Final Rule designating critical habitat excludes the ERF Impact Area and military lands of JBER between Mean Higher High Water and Mean High Water. As explained in the Final Rule designating its critical habitat, there are five PCE of beluga critical habitat of which one or more of the PCEs are found in its critical habitat. The PCEs are as follows:

- Intertidal and subtidal waters of Cook Inlet with depths less than 30 feet (mea lower low water) and within 5 miles of high and medium flow anadromous fish streams;
- Primary prey species consisting of four species of Pacific salmon (Chinook, sockeye, chum, and coho), Pacific eulachon, Pacific cod, walleye pollock, saffron cod, and yellowfin sole;
- Waters free of toxins or other agents of a type and amount harmful to Cook Inlet beluga whales;
- Unrestricted passage within or between the critical habitat areas; and
- Waters with in-water noise below levels resulting in the abandonment of critical habitat areas by Cook Inlet beluga whales.

These PCEs are features that are deemed essential for the conservation of the beluga.

Belugas have been sighted within the ERF Impact Area as far as 1.25 miles up the Eagle River and in Cook Inlet adjacent to JBER. Harbor seals and killer whales are sighted occasionally (USAG Alaska, 2010).

Fisheries. The main water bodies that contain fish occurring on the northern part of JBER-Richardson, include Ship Creek, Eagle River, Otter Creek, Fire Creek, ponds on ERF Impact Area, Clunie, Walden, Gwen and Otter Lakes, and adjacent Eagle Bay of Cook Inlet. Water bodies that contain fish on the southern part of JBER-Richardson are Ship Creek, North Fork Campbell Creek, Chester Creek, and perhaps Snowhawk Creek. Ship Creek is located downstream of Snowhawk Creek.

Any waters listed on the State of Alaska Anadromous Waters Catalog are presumed to be essential fish habitat for which consultation may be required under the Magnuson-Stevens Act.

Consultation is required for federal projects that have the potential to adversely affect essential fish habitat. Eagle River, Sixmile Creek and Lake, Ship Creek, the North and South Fork of Campbell Creek, and Chester Creek are depicted on the Catalog. Eagle River, Sixmile Creek/Lakes, Campbell Creek, and Chester Creek are known to contain spawning populations of salmon. There is no information on fish populations in Snowhawk Creek.

Ten fish species occur at JBER-Elmendorf including five Pacific salmon species (JBER, 2011a). Pacific salmon stocks are listed under the ESA and occur within Alaskan waters, but occurrence in the water near or within JBER is unlikely (NMFS, 2010).

Rainbow trout (*Oncorhynchus mykiss*) and Chinook salmon (*Onchorhynchus tshawytscha)* are stocked in Clunie Lake, Green Lake, and Hillberg Lake while arctic char (*Salvelinus alpinus*) is only stocked in Clunie Lake. Otter Lake is not planned for stocking in 2012 due to the existence of northern pike (an invasive species). All other lakes on JBER that may be stocked in the future would be limited to rainbow trout. Wild populations of the coho salmon (*Oncorhynchus kisutch*), chum salmon, sockeye salmon (*Oncorhynshus nerka*), pink salmon (*Oncorhynchus gorbuscha*), Dolly Varden (*Salvelinus malma*), and the three-spine stickleback (*Gasterosteus aculeatus*) may occur in Eagle River, Sixmile Creek and Lakes, and EOD Creek between Sixmile Creek/Lakes and Eagle River. The illegally introduced invasive northern pike (*Esox lucius*) occurs in Otter Lake. Current efforts are underway to eradicate pike from Otter Lake.

Terrestrial Mammals. Large mammals on JBER-Richardson include black bear, grizzly bear, moose, Dall sheep, and wolves (USAG Alaska, 2010). Small game and furbearers include coyote, lynx, red squirrel, snowshoe hare, hoary marmot, pine marten, beaver, river otter, wolverine, red fox, porcupine, mink, beaver, muskrat, and ermine or short-tailed weasel (USAG Alaska, 2010). All land mammal species are managed under regulations promulgated by the State of Alaska (USAG Alaska, 2010).

Over the past 20 years, the moose population at JBER has remained relatively stable with a projected population of 400 to 650 animals (JBER, 2010a). Although not formally identified on JBER, wildlife corridors would generally be located between the separation of ecotypes and along waterways; results of wildlife corridor studies on JBER may be available in the near future to confirm actual corridors (Troyer, 2012). Wetland (lowland and riverine) and alpine areas are the main sensitive ecotypes on JBER (Troyer, 2012). JBER ecotypes are presented on Figure 4.10-6.

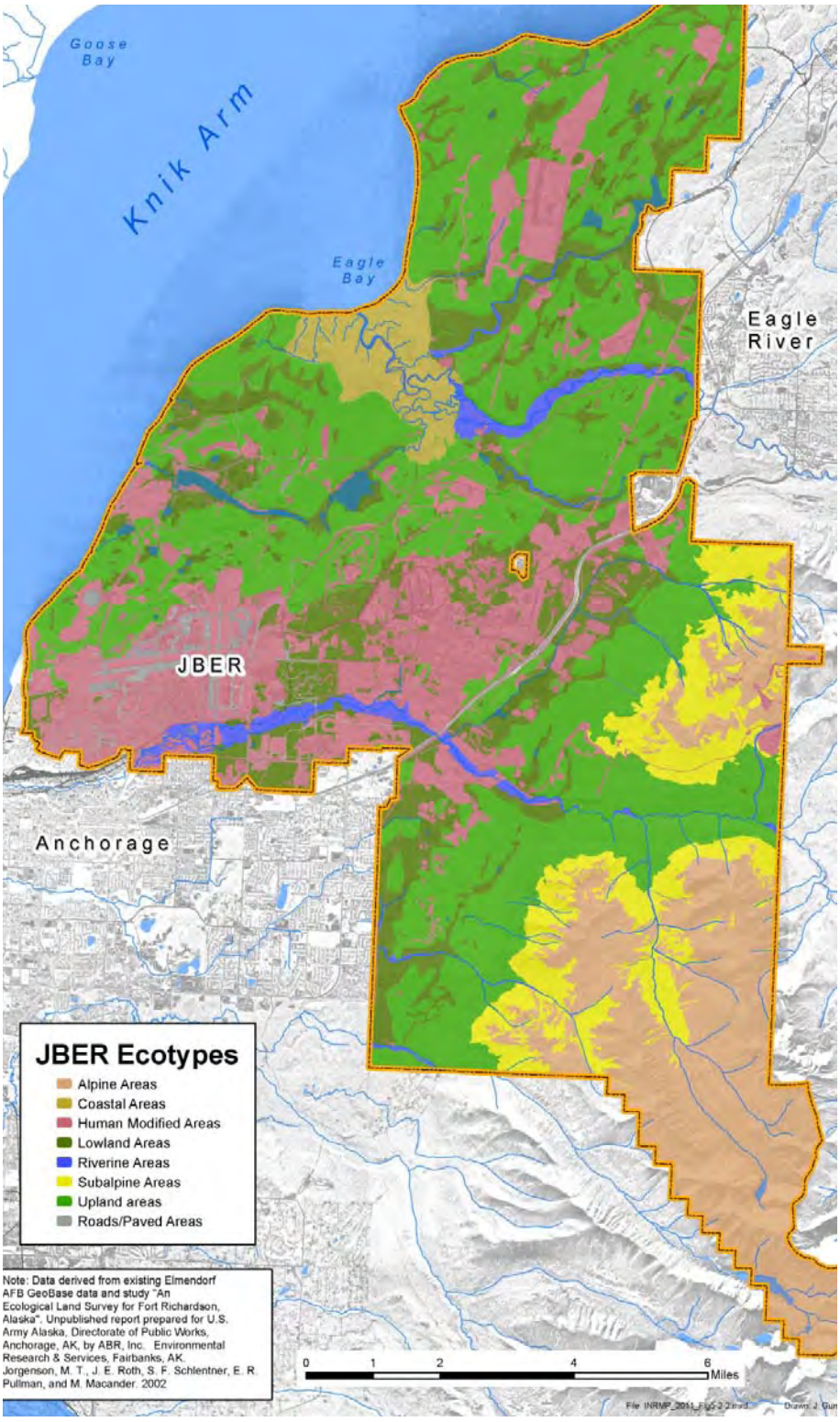
Waterfowl and Eagles. The MBTA and the Bald and Golden Eagle Protection Act offer protection for migratory birds and eagles that exist within JBER.

An estimated 1 million waterfowl pass over or near JBER-Richardson during spring migration and 1.2 million during fall (USARAK, 2004). Waterfowl mainly occur on the northern portion of JBER near the ERF Impact Area, Otter and Sixmile Lakes. The ERF wetland, located within the ERF Impact Area, serves as a major staging area for migrating waterfowl. JBER-Richardson also provides habitat for two species of eagle, the bald eagle (*Haliaeetus leucocephalus*) and the golden eagle (*Aquila chrysaetos*). Eagle populations are not well documented for the southern part of JBER-Richardson, but known nest locations exist within the northern portion. Bald eagle nests were surveyed on JBER in 2011 and fourteen active nests were identified; two were south of the Glenn Highway (Griese, 2012). Golden eagle nests, typically found in the alpine on cliff faces, have not been documented on JBER (Griese, 2012).

As part of the INRMP, JBER Conservation Staff monitor the location of eagle nests and occupancy throughout the year to ensure eagle nests are not adversely affected during construction and training activities. In addition, when trees are removed, JBER follows the USFWS construction guidance on not removing trees during the nesting season.

Priority Species for JBER. The following information is extracted from the 2012 JBER INRMP that is under preparation and anticipated to be released early this year. Priority species (Table 4.10-11) for JBER include:

- **Keystone or Key Species** (K) play a disproportionately large role in ecosystem structure. Their significant ecosystem role may be because they are important to the feeding structure, provide a critical process in the system, provide necessary interactions, or generally have a significant impact on the ecosystem.
- **Managed Species** (M) unlike key species, are chosen based on human values instead of ecosystem values. These species may or may not be key or indicator species. They likely have socioeconomic importance as a locally harvested species.
- **Species with Legal Constraints** (L) have been listed as endangered or threatened by the USFWS, National Oceanic and Atmospheric Administration and/or Alaska Department of Fish and Game. Additionally, this group could contain species that are of concern from an installation, regional, or state perspective (USFWS, BLM, U.S. Forest Service, and Audubon) as summarized in the 2011 Alaska Natural Heritage Program species tracking lists. [Online: http://aknhp.uaa.alaska.edu/wp-content/uploads/2010/11/All_Tracking_Lists_Combined_7Nov2011.pdf].
- **Indicator Species** (I) are species that managers choose to track ecosystem health or status or have specific management programs. These species may or may not be key or managed species, and may include invasive species.



Source: JBER, 2010c.

Figure 4.10-6. Joint Base Elmendorf-Richardson Ecotypes

Table 4.10-11. Priority Species at Joint Base Elmendorf-Richardson

Species	Ecotypes represented	Species Category
Mammals		
Little Brown Bat	Human modified, Upland, Lowland	M
Gray Wolf	All but Human modified and Pavement	M, K
Lynx	Upland, Lowland, Subalpine	K
Wolverine	Alpine, Subalpine, Upland	M
Harbor Seal	Coastal	L
Black Bear	Upland, Lowland, Subalpine	M
Brown Bear	All but Human Modified and Pavement	M,K
Beluga Whale	Coastal	L, I
Moose	All but Pavement	M
Dall's Sheep	Alpine	M
Beaver	Lowland, Riverine	K,M
Microtines	All but Pavement	I
Collared Pika	Alpine	I
Snowshoe Hare	Upland, Lowland, Subalpine, Riverine	K, M, I
Birds		
Canada Goose	Lowland	M
[3]Trumpeter Swan	Lowland	L
All grouse species	Upland, Subalpine, Alpine	M
Loons (Common and Pacific)	Lowland	I
Bald Eagle	Upland, Lowland, Riverine	L, M
Northern Goshawk	Upland	I
[3]Golden Eagle	Alpine	L
Sandhill Crane	Coastal, Lowland	M
[1]Solitary Sandpiper	Upland, Lowland	L
[1]Lesser Yellowlegs	Lowland	L
Boreal Owl	Upland	I
[1]Olive-sided Flycatcher	Upland, Lowland	L
American Dipper	Riverine	I
[2]Varied Thrush	Upland, Subalpine	I
[2]Blackpoll Warbler	Upland, Subalpine	L
[3]Townsend's Warbler	Upland, Riverine, Subalpine	L
White-crowned Sparrow	Upland, Subalpine	I
Golden-crowned Sparrow	Subalpine	I
[1]Rusty Blackbird	Lowland	L
Amphibians		
Wood Frog	Lowland, Upland	I
Fish		
Northern Pike	Lowland, Riverine	K,I

Coho Salmon	Lowland, Riverine	K,M,I
Sockeye Salmon	Lowland, Riverine	K,M,I
Rainbow Trout	Lowland, Riverine	M
Insects		
Odonates	Lowland, Riverine	I
Plants		
Prunus padus	Lowland, Riverine	I
Picea alba	Upland	M
Betula papyrifera	Upland	K, M
Viola selkirkii	Alpine	L #
Taraxacum carneocoloratum	Alpine	L #
Saxifraga adscendens ssp. Oregonensis	Alpine	L #
Vicia cracca	Upland, Human modified	I
(Suite of undetermined vascular plants)	Alpine	I #
(Suite of undetermined vascular plants)	Coastal	I #

Source: JBER, 2010c (internal citations omitted).
[1]USFWS, 2008. Birds of Conservation Concern 2008. U.S. Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 pp. [Online version available at http://www.fws.gov/migratorybirds/]
[2]2010 Audubon watch list[3]Bureau of Land Management (BLM)
= Needs additional research

Special Interest Areas: Ship Creek and Eagle River Flats Impact Area. Areas previously identified on JBER-Richardson as sensitive habitats for sensitive or unique wildlife species or plant communities include:

- Ship Creek Riparian Area;
- ERF and associated tidal wetlands;
- Alpine tundra in the adjacent Chugach Mountains;
- Old growth forest; and
- Snowhawk Valley.

Water quality at Ship Creek is important to both people (drinking water) and marine mammals (a PCE for the beluga). The ERF Impact Area and the ERF wetland are important for natural resources conservation and for continued military training (USAG Alaska, 2010). Wetlands play a role in reducing flood damage and preserving water quality (JBER, 2010a). Wetlands exist along Ship Creek and at the ERF Impact Area (PACAF, 2012).

Vegetation plays an important role within range and training lands including providing concealment and realistic training conditions, habitat to wildlife, filtering of surface water runoff, stabilization of soils, and regulating GHGs (USAG Alaska, 2010). The largest threat to vegetative communities is spreading invasive species by transporting seeds and propagative plant parts on equipment (Robinson, 2012). An ecological survey of JBER-Richardson indicates the installation is covered by 55.3 percent forest (USAG Alaska, 2010). Forty eight percent of

FRA over the past 200 years has been affected by fire (USAG Alaska, 2010). This was indicated by the occurrence of early to mid-successional forest stages that have developed since the fires in the 1800s and early 1900s (USAG Alaska, 2010). Second growth forests may make up the majority of the JBER cantonment area since this area has been previously disturbed; however, at the time of this PEA, information on the location of old growth forest within JBER is not readily available, but suspected to exist within JBER.

A 1997 publication by alpine researchers identified Snowhawk Valley as a unique and sensitive area on JBER-Richardson that should also be managed as sensitive/special interest area (Walker, 1997).

Current and prospective natural resource projects at JBER will be set forth in the current Interim 2010 INRMP (the 2012 JBER INRMP is in preparation).

Recreational Hunting, Fishing. In accordance with the Sikes Act, JBER allows recreational use of its land and resources by the public when not being used for military training. Most of the northern part of JBER-Richardson is open to recreational use, while the southern part of the installation is only open to non-motorized forms of recreation (JBER, 2010a). The public has access to the installation for camping, hunting, fishing, skiing, dog sledding; and in some areas there is access for off-road recreational vehicles as well as access to the Moose Run Golf Course and Otter Lake (JBER, 2010a). Public access to JBER is facilitated by the U.S. Army Recreation Tracking website; however, current efforts by JBER are underway to upgrade this system (http://www.jber.isportsman.net/). For more information, see http://www.usarak.army.mil/conservation/ REC_USARTRAK.htm.

JBER-Richardson is located within the Alaska Department of Fish and Game's Game Management Unit 14 and Game Management Subunit 14C. A detailed map of Game Management Subunit 14C and the wildlife species available for hunting (and their associated seasons and regulated hunting limits) is found in the Alaska Department of Fish & Game's 2011-2012 Alaska Hunting Regulations, No. 52 (Regulated by Title 5, Alaska Administrative Code and Title 16 of Alaska Statutes).

Fish stocking is a common activity at four lakes on JBER-Richardson (Clunie, Gwenn, Otter and Waldon lakes) and is intended to promote the recreational use of Army lands while improving the health of rainbow trout (*Oncorhynchus mykiss*), Chinook salmon (*Onchorhynchus tshawytscha*), and arctic char (*Salvelinus alpinus*) populations. However, Otter Lake has not been stocked since 2006 due to the invasive northern pike that prey on the stocked fish species.

Subsistence. Military lands are excluded from the federal subsistence management program established under the Alaska National Interest Lands Conservation Act because of national security and defense reasons, and therefore, JBER lands are not available for use by rural Alaska residents for harvest of subsistence resources (Scudder, 2011). Note, however, that some recreational activities may include subsistence-type activities, e.g., berry picking. These recreational activities, although permitted on JBER, are not to be confused with subsistence as the term is used under Alaska National Interest Lands Conservation Act.

JBER-Richardson is located within the traditional lands of the Dena'ina, northern Athabascan Tribes of Cook Inlet (U.S. Army, 2008a). Several locations on JBER-Richardson have been identified as areas of traditional use by Dena'ina Athabascans, such as areas along Clunie Creek, coastal bluffs north of Eagle River, and the Knik Arm shoreline. For example, the School Fish Camp Site is located along the Knik Arm shoreline and was used for subsistence fishing by a Bureau of Indian Affairs vocational school from 1924 to 1946. ERF has also been identified as an important subsistence area. Consultation with Alaskan Native Tribes to identify TCPs or other sites of cultural or sacred significance is on-going.

Wildland Fire Management. Wildland fire management in Alaska requires multi-agency cooperation. Fire management is a joint effort by JBER, the BLM, and Alaska Fire Service that is governed/facilitated by the Alaska Wildland Fire Management Plan (U.S. Army, 2008a). The north post of JBER-Richardson is classified for Full and Critical fire management options due the high value of resources at risk from fire, in addition to the post's proximity to Anchorage and Eagle River (U.S. Army, 2008a). Most of the north post is classified for Critical fire management (U.S. Army, 2008a). The training areas along Knik Arm are classified for Full fire management (U.S. Army, 2008a). The south post has areas classified under Critical, Full, and Limited fire management. Most of the south post is under Full fire management because the area is mainly used for military training and small arms ranges (U.S. Army, 2008a). The alpine zones are classified for Limited fire management because of their remote location (U.S. Army, 2008a). Although wildfires are a concern at JBER-Richardson, no major fires have occurred on JBER-Richardson since 1950; the last fire at JBER-Richardson larger than 50 acres occurred in 2007. Fires are usually mission-related, small, and easily contained. However, there is some concern over the spruce bark beetle that killed most of the larger white spruce in the North and South Post training areas (U.S. Army, 2008a). The dead spruce has resulted in high fuel load conditions on the forest floor. To reduce this threat, fuels reduction is carried out on JBER (U.S. Army, 2008a). Wildfires have been traditionally confined to areas behind the SAC range on JBER-Richardson (USAG Alaska, 2010). Fire response times for most of the installation are not anticipated to be a problem.

4.10.7.2 Environmental Consequences

No Action Alternative

Significant but mitigable adverse effects would occur at JBER under the No Action Alternative. JBER would continue to adhere to its existing resource management plans and INRMP to further minimize and monitor any potential effects. Units are briefed prior to each training event regarding sensitive areas on post, such as protected species habitat, and what is and is not allowed within certain areas.

Cantonment Construction. The cantonment area is generally not suitable habitat for biological resources. However, wildlife may traverse the cantonment area or take up residence in trees, in the case of avian species. Potential effects to biological resources from construction-related activities within the cantonment area include noise impacts, stormwater runoff from construction sites, loss of vegetation and trees, and increased soil erosion. However, any species that occur within the cantonment area may be adapted to noise impacts as construction noise would be part of the background noise. Stormwater runoff from the construction site(s) may result in short-term adverse impacts to nearby water bodies and wetlands, increasing turbidity and temporarily degrading water quality and potentially impacting the fish and invertebrates that live and feed in those waters; and indirectly affecting the terrestrial, avian, and marine mammals (such as the beluga) that feed on fish that use these waterways (U.S. Army, 2008a). Stormwater runoff may be prevented by implementation of BMPs and SWPPPs measures. Removal of trees in the cantonment area would not affect old growth forest stands. If trees are removed, care would be taken to remove trees outside of the nesting season, in accordance with the construction guidance formulated to ensure compliance with the MBTA. However, the loss of vegetative cover would increase the incidence of soil erosion and potentially cause segmentation of ecotypes and disrupt wildlife movement throughout the installation. Adverse effects to biological resources may also adversely affect recreation activities based on these resources, e.g., hunting and fishing; however, there is no data to indicate a decline in any species as a result of activities carried out on JBER. Also, no impacts to subsistence rights are anticipated because JBER is excluded from the federal subsistence management program.

Implementation of the INRMP and ITAM (for soil management/monitoring) program work plans and associated BMPs and SWPPPs would continue to ensure that impacts to biological resources would be less than significant. Direct adverse impacts to moose, waterfowl, eagle, fish populations would not be anticipated.

Range Maintenance. Maintenance would be limited to already disturbed areas within ranges and training areas; however, because these areas are located away from the cantonment area, these activities have a greater potential to adversely affect biological resources. Noise from construction-type activities extend no more than 0.5 miles from the noise source and so potential noise impacts at these ranges and training areas would be localized and short term. Implementation of the INRMP and ITAM program work plans and associated BMPs would continue to ensure that impacts to biological resources would be less than significant.

Since new construction is not anticipated, the potential to affect old growth forest that may occur in these remote areas of JBER would be low. Direct adverse impacts to moose, waterfowl, eagle, fish populations would not be anticipated.

***Live-Fire Training*.** Weapons firing can remove vegetation directly and indirectly through the disturbance of vegetation and soils increasing the erodibility of soils and requiring more monitoring and maintenance under the ITAM program. Live-fire training could potentially increase the frequency of wildfires. Sources of wildfire ignition would include small arms fire, vehicles, flammable materials, and cigarettes. Prescribed burns of deadfall timber would continue to ensure reduced levels of fuel loading in range areas.

Noise from weapons firing can disturb wildlife, causing more sensitive species and individuals to move away from training ranges. Displacement would be caused by increased human presence in the area, as well as by elevated noise levels. Wildlife species that are more tolerant of human activity may remain in or around these ranges. Direct impacts to wildlife from noise associated with live-fire activities would be long term but are not anticipated to be significant. If food is abundant on or near the ranges, wildlife species tend to adjust to training activities.

Current efforts are underway to evaluate potential noise impacts to the beluga whale and other marine mammals to ensure compliance with the ESA/MMPA. The potential for fires to affect old growth forest would exist in these more remote areas of JBER where it is likely that old growth forests could occur and exist. Direct adverse impacts to moose, waterfowl, eagle, and fish populations are not anticipated. Implementation of the INRMP and ITAM program work plans and associated BMPs would continue to ensure that impacts to biological resources would be less than significant.

***Maneuver Training*.** Maneuver training would continue within the existing ranges and would have the potential to affect biological resources. Noise impacts to wildlife are not anticipated to have a significant impact. Direct adverse impacts to moose, waterfowl, eagle, and fish populations are not anticipated.

Significant impacts are not anticipated to biological resources from the continuation of current operations because of adherence to natural resource programs and plans, BMPs, and management measures; however, adverse effects would occur as a result of direct and indirect impacts to soil resources, water resources, and from noise.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Minor impacts to biological resources, as a result of the implementation of Alternative 1, are anticipated. Scheduling conflicts for training area access to conduct resource monitoring would be reduced. Proactive conservation management practices and species monitoring would be more easily accomplished with reduced mission throughput. The land within the main

cantonment area where deconstruction would occur does not support any critical habitat, threatened or endangered species, or Species of Concern. This area is highly disturbed and used by humans daily. Consequently, the impacts to wildlife from deconstruction on the garrison are anticipated to be negligible or minor, but ultimately beneficial.

Construction vehicles operating in the cantonment area could spill hazardous materials such as POLs onto the soil surface which could remain in the soils for an extended period of time and may enter groundwater. POLs may also be transported to surface waters with runoff from the construction site. Hazardous materials that enter the soil media and water column may have detrimental effects to the wildlife that inhabit and use these areas. JBER has SWMPs in place to mitigate the effects of sediment and hazardous materials transport.

Impacts to vegetation from deconstruction can include breaking and crushing of plants and direct mortality. This can directly or indirectly alter plant community composition and structure and vegetative cover; however, the extent to which these plant communities have been previously disturbed is an important consideration in assessing impacts. Fugitive dust from these construction projects could occur and result in short-term impacts to vegetation. Deconstruction projects would occur in existing, disturbed cantonment areas, and there would be little or no direct impacts to native or sensitive vegetation.

Soils that are disturbed from deconstruction could be transported to surface water thereby causing temporary increases in turbidity, and degrading the water quality. Impacts to water quality have direct effects to the inhabitants (fish, invertebrates) and indirect effects to the wildlife that forage for food in these areas. JBER implements BMPs and SOPs to minimize the impacts from sedimentation into nearby water bodies. Consequently, the impacts to water quality are anticipated to be negligible or minor.

Since no training infrastructure construction or expansion would occur, no effects to vegetation, wildlife, or Species of Concern are anticipated. Invasive species is a concern on all Army lands and JBER is committed to proactive management of non-native species; therefore, no anticipated impacts from noxious weeds would occur.

The number of required live-fire user days per year at JBER would drop below current levels. A reduction in live-fire training related wildfires is anticipated, as well as reduced impacts to fish and wildlife and vegetation. Reducing the number of Soldiers stationed at JBER would open up opportunities for more recreational activities because training areas wouldn't be closed as often.

The intensity and frequency of maneuver training at JBER would drop below current levels. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at JBER. Reduced impacts to fish, wildlife and vegetation would be similar to that discussed for live-fire training. Reducing the number of Soldiers stationed at JBER would open up opportunities for more recreational activities because training areas wouldn't be closed as often. No impacts to subsistence rights are anticipated because JBER is excluded from the federal subsistence management program.

Although impacts to biological resources would continue to occur, the reduction in maintenance, live fire, and construction activities are not anticipated to result in more than minor impacts to biological resources above baseline conditions. Current efforts are underway to evaluate potential noise impacts to the beluga whale and other marine mammals to ensure compliance with the ESA and MMPA.

Reduced impacts are anticipated from lesser potential to adversely affect biological resources during construction, maintenance, and training. Short-term minor impacts would occur with regards to facilities demolition and deconstruction in the existing cantonment area. Further analysis would be required to quantify the significance of these impacts.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Significant but mitigable adverse impacts are anticipated, as a result of the implementation of Alternative 2. The increase in the number of Soldiers is less than 20 percent above the current stationing level. While this moderate force augmentation would increase traffic in the training lands and ranges, it would not cause significant degradation or destruction of rare or sensitive species habitats. The land within the main cantonment area where construction and deconstruction would occur does not support any critical habitat, threatened or endangered species, or species of concern. Construction would occur as infill within the main cantonment area. This area is highly disturbed and used by humans daily. Habitat destruction could occur for those species habituated to a more urbanized environment; however, wildlife species that may currently habituate these areas (such as some bird species) are likely already adapted to the human presence and may adjust.

Construction activities (increase in vehicles and human presence) creates noise and disturbs wildlife; however, these activities have not shown to be detrimental to foraging behavior or reproductive success, but this observance may vary by location, species, and type of human activity. Construction vehicles operating in the cantonment area could also spill hazardous materials such as POLs onto the soil surface which could remain in the soils for an extended period of time and may enter groundwater. POLs may also be transported to surface waters with runoff from the construction site. Hazardous materials that enter the soil media and water column may have detrimental effects to the wildlife that inhabit and use these areas. JBER has SWMPs in place to mitigate the effects of sediment and hazardous materials transport.

Impacts to vegetation from construction and deconstruction and training can include vegetation shear or clearance. This can directly or indirectly alter plant community composition, structure and vegetative cover, and can lead to increased presence of invasive species. Fugitive dust from these construction projects could occur and result in short-term impacts to vegetation. Construction and deconstruction projects would occur in existing, disturbed cantonment areas, and there would be little or no direct impacts to native or sensitive vegetation. New construction to the north and in the southeast corner of the installation cantonment area may be needed. Clearing of vegetation and soils may lead to the movement of animals away from the construction site.

Soils that are disturbed could be transported to surface water; thereby, causing temporary increases in turbidity, and degrading the water quality. Impacts to water quality have direct effects to the inhabitants (fish, invertebrates) and indirect effects to the wildlife that forage for food in these areas. BMPs and management procedures used by JBER to prevent soil migration would be implemented to reduce these impacts.

Recreational activities or wildland fire management are not anticipated to be impacted from construction and deconstruction that would occur as a result of this alternative; however, no impacts to subsistence rights are anticipated because JBER is excluded from the federal subsistence management program.

Construction noise on the JBER lands could temporarily impact wildlife species using these areas for shelter and foraging. Some species of priority, which includes moose and waterfowl could be temporarily driven away due to the construction noise; however, most species would return due to the availability of food and shelter.

An increase in training infrastructure construction may close training areas to recreational activities for short periods of time. Consequently, these impacts are anticipated to be minor.

The frequency and intensity of live-fire training in the JBER small arms range complex would increase by approximately 10 to 20 percent. Units would use the same weapons systems that are currently being utilized at JBER and qualitatively noise-generating events would be the same. Wildlife using these areas would adjust to any live-fire training modifications and short-term effects are anticipated. These may include the temporary avoidance of live-fire areas and the scattering of smaller mammals when firing is first initiated.

Impacts from live-fire activities would also include the disturbance of soils and vegetation on ranges, increasing the erodibility of soils and requiring more monitoring and maintenance. Live-fire training could increase the frequency of wildfires. Several fire mitigation measures, such as prescribed burning and hazard fuels reduction and firebreaks, are being implemented throughout the JBER on existing ranges and would be continued under all stationing scenarios. JBER is only subject to wildfire risk at certain times of year and this risk is greatly reduced during the winter, spring melt, and fall seasons. In general, the wet conditions reduce the overall fire risk. Impacts to wildland fire management from an increase in live-fire training are anticipated to be negligible or minor.

The frequency of maneuver training could increase by approximately 10 to 20 percent. Units would support combat maneuver units by providing logistics support, mainly on roads and hardened surfaces. The increase in maneuver mileage would result in relatively minor effects to the existing range road network. Potential direct impacts include damage to soil surface and causing disruption to the permafrost layer below. Disruption of soils may create situations where permafrost melts, resulting in saturated conditions or subsidence. The potential for this occurs on frozen soils particularly when the permafrost is shallow. JBER has BMPs in place to avoid impacts to permafrost, these include avoiding areas where permafrost is known or thought to occur during warmer weather conditions, and the limitation of maneuver over permafrost to wintertime when snow depth is sufficient enough to ensure an insulating layer can support maneuver while maintaining the integrity of the permafrost below. Any impacts to permafrost may considerably alter the landscape and habitat in training areas. However, these areas are avoided when possible and limited impacts would be anticipated as Combat Service Support units would mostly use existing roads and trails.

The higher rate of maneuvers may have short-term immediate impacts to wildlife from the additional noise; however, these impacts may be temporary as training with these scenarios would not introduce new types of weapons to the range areas, and would not increase the level of noise above what is heard currently on ranges. As cited above, wildlife would likely quickly adjust to the new training schedules. Wildlife populations would be able to tolerate some disturbance from vehicular traffic; however, information available currently is insufficient to determine the extent of population-wide effects. Wildlife would be closely monitored by JBER's ecosystem management program to understand better the impacts and the extent of disturbance resulting from increased road use.

Increases in maneuver training frequency could temporarily affect the distribution of moose. Moose appear well adapted to multiple use management (forestry, hunting, and military activities), and military training seems no more detrimental to moose populations than other land uses. Impacts to moose populations are potentially significant if winter habitats were degraded. However, moose are readily adaptable to the creation of new early succession habitat. Moose managers agree that activities that disturb soils and forest cover produce benefits for moose by creating or enhancing early succession habitat.

Maneuver training would also result in negligible or minor impacts to fisheries. Expected increases in training levels could lead to higher rates of erosion and sedimentation, as well as an increased potential for petroleum spills during refueling. Implementation of the JBER

institutional programs as well as INRMP and ITAM program work plans and associated management practices along with additional soil erosion mitigation measures would continue to ensure soil erosion-related impacts caused by maneuver training would be negligible or minor.

Wildfire ignition from vehicle use and human activity may occur. Mitigation measures currently utilized by the JBER are designed to prepare the landscape for impending wildfires. Patches of thinned trees and controlled burns in high-risk areas may slow wildfire intensity and speed. Impacts to wildland fire management from an increase in maneuver training are anticipated to be negligible or minor.

The increased frequency of maneuver training may also result in restrictions to recreational uses of JBER lands. JBER would continue to identify areas available to the public and offer access for recreational use. Additional personnel stationed at JBER might participate in recreational hunting and fishing activities and could impact current availability resources. No impacts to subsistence rights are anticipated because JBER is excluded from the federal subsistence management program.

Current efforts are underway to evaluate potential noise impacts to the beluga whale and other marine mammals to ensure compliance with the ESA/MMPA. Consultation would be required for Alternative 2 to ensure compliance with the ESA and MMPA as Alternative 2 would result in increased training at JBER.

Significant but mitigable impacts are anticipated to biological resources. JBER would continue with management outlined in the INRMP and with actions agreed to as part of ESA consultation with the USFWS. Continued implementation of maintenance, programs/plans and BMPs would ensure no significant impacts occur to biological resources.

4.10.8 Wetlands

4.10.8.1 Affected Environment

The ROI for this VEC is JBER and surrounding areas where wetlands are or may be located, which could be affected by impacts at JBER.

On JBER, wetlands are prevalent to the north and south of the cantonment areas (PACAF, 2011). At JBER-Richardson, nearly 4,990 acres of land (or approximately 8 percent) is classified as wetlands and include marine and freshwater, tidal and non-tidal types. The largest contiguous wetland complex is ERF, which makes up the majority of the land within the ERF Impact Area; approximately 2,165 acres. The ERF is a 2,140-acre estuarine salt marsh located at the mouth of Eagle River. Table 4.10-12 provides more details on wetland types at JBER-Richardson.

Table 4.10-12. Wetlands on Joint Base Elmendorf-Richardson - Richardson

Wetland Type	JBER-Richardson Land (Percent)	Wetland Characterization and/or Location	Vegetation
Coastal Halophytic Zone	3	Shoreline tidal flats and barren mud flats. Eagle River Flats (2,165-acre estuarine marsh).	Rye grass, Lyngebye sedge, Maritime arrow grass, Glasswort, Goose tongue, and Alkali grass.

Table 4.10-12. Wetlands on Joint Base Elmendorf-Richardson – Richardson (Continued)

Wetland Type	JBER-Richardson Land (Percent)	Wetland Characterization and/or Location	Vegetation
Lowland Forest Wetlands	3	Palustrine. Bordering Ship Creek, McVeigh Marsh, Fossil Creek Bottomlands; areas southwest of Eagle River Flats; and south and west of Clunie Lake.	Bluejoint grass, Oak fern, Red raspberry, Lowbrush cranberry, Red currant, shrubs, and sedges.
Lacustrine Wetlands	1	Open water and vegetated with sedges.	Marsh Five-finger, Marsh and Woodland horsetail, Cahmiss's cottongrass, Shore sedge, and Sphagnum moss.
Alpine and Subalpine Wetlands	0.3	Sub-alpine areas of JBER-Richardson.	Bluejoint meadow wetlands.

Source: U.S. Army, 2008a.

The largest wetland on JBER is the ERF Impact Area, which is classified as a coastal halophytic wetland. As discussed above, this area provides an important staging ground for migratory birds. The ERF is listed on the EPA's National Priorities List due to white phosphorus, which adversely affected waterfowl; however, other munitions constituents have not been detected at levels that warrant treatment. Some past studies may be found at USACE, Engineer Research and Development Center, available at, www.crrel.usace.army.mil (last accessed January 3, 2011). Since the ERF Impact Area has been used for live-fire training since the 1940s, any accumulation of potential contaminants from munitions residue would have been discovered during past studies carried out at the ERF Impact Area from the 1980s to the 1990s. For a summary of findings see ERF, Comprehensive Evaluation Report, Fort Richardson Alaska (CH2M Hill, 1994). It is likely that the ERF is acting as a filter and preventing the accumulation of munitions residues and contamination of the surrounding areas and waters (see e.g., EPA 2012c). Munitions containing phosphorus as a primary constituent are now banned in wetlands per AR 385-63, Safety, Range Safety, Headquarters DA: Washington, DC.

Pursuant to U.S. Air Force NEPA regulations (32 CFR 989.14(g)) any project that could be located within a floodplain or a wetland must be evaluated in an EA and supported with a finding of no practicable alternative.

4.10.8.2 Environmental Consequences

No Action Alternative

Less than significant impacts to wetlands are anticipated under the No Action Alternative. Wetlands would be impacted through training, sedimentation, and construction each year, but these impacts would not be significant.

***Cantonment Construction*.** Activities within the cantonment area are not likely to affect wetlands as no wetlands are located within the cantonment area; however, similar to biological resources, direct and indirect adverse impact could occur from site runoff and adversely affect the quality of wetlands if located near these areas. Implementation of BMPs/SWPPPs and continued implementation of natural resource programs and plans (e.g., ITAM) would ensure impacts to wetlands are avoided. Siting projects would avoid areas with wetlands by coordinating projects with the JBER Conservation department prior to work, where wetlands

may occur in the project area. This is important in the springtime, when it has been historically difficult to differentiate between wetlands and temporary standing water from snowmelt. Ground-truthing efforts to determine whether an area is a wetland may be required and have been carried out in the recent past with the assistance of the USACE. Pursuant to Air Force NEPA regulations (32 CFR 989.14(g)) any project that could be located within a floodplain or a wetland must be evaluated in an EA and supported with a finding of no practicable alternative.

Range Maintenance. Wetlands are more common in areas outside of the cantonment area, which would be used by the 4/25 Airborne BCT. Maintenance of existing range and training areas is not anticipated to directly impair wetlands, e.g., cause a loss of wetlands; however, direct and indirect impacts from maintenance operations could impair the quality of wetlands if located in close proximity to these areas. Wetlands are known to be located within areas used by the 4/25 Airborne BCT; however, they are more likely located in the parts of ranges and training areas where the majority of training does not occur, with the exception of the Army's use of ERF for artillery and live-fire training.

Live-Fire and Maneuver Training. Live-fire training has occurred within the ERF wetlands since the 1940s with no evidence that the nature or function of the wetland is being adversely affected. The ERF Impact Area continues to be an important staging ground for migratory birds, despite the past die off of waterfowl that occurred due to white phosphorus. White phosphorus is no longer in used in the ERF Impact Area. Maneuver training would continue, with no direct impacts to wetlands anticipated. A majority of impacts would be indirect, resulting from soil sedimentation impacts into existing wetlands from adjacent maneuver areas. The installation would continue to implement Land Rehabilitation and Maintenance (LRAM) through the ITAM program to reduce and repair maneuver damage that could lead to wetlands impacts. Less than significant impacts to wetlands are anticipated.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Beneficial impacts are anticipated as a result of the implementation of Alternative 1. The reduction of approximately 4,300 Combat/Combat Support Soldiers is not anticipated to adversely affect wetlands. It is likely that substantial reduction in force as a result of this alternative could result in decreased stressors on wetlands located in close proximity to the cantonment area to below current impacts, although the potential to impact wetland would continue as operations at JBER would continue in support of the remaining military population. Deconstruction of facilities is not likely to result in sedimentation as there are no wetland resources directly adjacent to the cantonment area. The impacts would likely be negligible or minor because the JBER has SWMPs in place to mitigate the effects of sediment transport. No new range construction would occur. In addition, none of the current ranges would be expanded. Therefore, no effects to wetlands are anticipated from range construction.

The number of required live-fire and maneuver training user days per year at JBER would drop below current levels. Because the live-fire ranges were located to avoid significant wetland impacts, continued live-fire training is not anticipated to affect the function or presence of wetlands at JBER. No new maneuver areas would be required and maneuver training would be conducted in the footprint of existing or previously approved ranges and trails at JBER. Consequently, no change in impacts to wetlands from maneuver training is anticipated.

Maneuver training would continue to lead to direct and indirect impairment of wetlands, but at greatly reduced levels with the loss of the 4/25 Airborne BCT and other Combat Support units. Decreased stressors on wetlands are anticipated, although the potential to impact wetlands would continue as operations at JBER would continue in support of the remaining military population.

Reduced impacts are anticipated from lesser potential impacts to wetlands. Further analysis would be required to quantify the significance of these impacts.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Overall, less than significant impacts to wetlands are anticipated as a result of the implementation of Alternative 2.

Garrison Construction and Deconstruction. Loss of wetlands is not anticipated as a result of the Proposed Action because no wetlands are present in the cantonment area. The minor effects from construction and demolition would be less harmful in winter due to the frozen nature of the wetlands, and the snowpack that protects vegetation. The impacts would likely be negligible or minor because the JBER has SWMPs in place to mitigate the effects of sediment transport.

Increased potential for wetland impairment could occur from increased maintenance within areas near wetlands. Increased potential for impairment could occur from increased live-fire training, although past studies of the ERF Impact Area suggest that wetlands may filter out any potential contaminants that may enter the wetland. As discussed for the No Action Alternative, white phosphorus is no longer used as part of live-fire training exercises. Increased maneuvers would lead to minimal additional impacts to wetlands at JBER. Increased use of un-improved trails would result in more sediment loading into adjacent wetlands and surface waters, though the overall increase in use would be minimal. No additional roads or trails would be constructed; therefore, only minor impacts to nearby wetlands from runoff are anticipated. Site-specific analysis would identify range roads and trails that these units may use to train, their proximity to wetlands, and potential impacts.

Less than significant impacts to wetlands are anticipated, although increased adverse effects may result from the increased use of the ranges and training areas within and/or adjacent to wetlands. Further analysis would be required to quantify these impacts.

4.10.9 Water Resources

4.10.9.1 Affected Environment

The ROI for this VEC is JBER and surrounding areas where water resources are located, which could be affected by impacts at JBER.

Surface Water. JBER-Richardson is located within the Anchorage watershed (JBER, 2010a). Most of the streams on JBER-Richardson flow from the headwaters in the Chugach Mountains to the Knik Arm of the Cook Inlet (JBER, 2010a). Major waterways in Alaska may be classified as either glacial or non-glacial (U.S. Army, 2008a). Each variety of waterway experiences higher flow conditions during spring and summer, whereas water flow is reduced (low flow) during the fall and winter seasons (U.S. Army, 2008a). Non-glacial waterways experience a sharper increase in flow during May coinciding with snowmelt; and glacial waterways tend to experience peak discharge in June or July, coinciding with melting of glaciers (U.S. Army, 2008). Eagle River is the largest stream that traverses JBER and is glacial fed (JBER, 2010a). Eagle River flows through JBER-Richardson and settles out at ERF, the estuarine tidal marsh located at the mouth of the river (U.S. Army, 2008a).

Ship Creek is the second largest river (JBER, 2010a). Ship Creek (a non-glacial waterway) that flows from Ship Lake at the Chugach Mountains to the Knik Arm (U.S. Army, 2008a). Other perennial streams on JBER include Chester Creek and the North Fork of Campbell Creek (JBER, 2010a). Chester Creek (located south of Ship Creek) flows through the southwestern portion of JBER-Richardson and into a marsh wetland at the base of the Chugach Mountains

and then is re-channeled near JBER-Richardson's western border (U.S. Army, 2008a). North Fork Campbell Creek is a non-glacial stream that stems from Long Lake (in the Chugach Mountains) and flows across JBER-Richardson's southwestern corner where water flow there recharges the groundwater aquifer (U.S. Army, 2008a). McVeigh Creek also begins near the Chugach Mountains and flows west to southwest (parallel to Glenn Highway) and flows through JBER-Richardson's small arms range where it continues to McVeigh Marsh and drains into Ship Creek upstream from the Glenn Highway Bridge (U.S. Army, 2008a).

Snowhawk Creek (also non-glacial) is a tributary to Ship Creek; it drains Tanaina Lake and flows northeast through Snowhawk Valley and joins Ship Creek upstream of Ship Creek Dam and Reservoir (U.S. Army, 2008a). Clunie Creek flows from wetlands located south of Clunie Lake into ERF and ultimately drains into Knik Arm (U.S. Army, 2008a).

Otter Creek is a perennial stream that flows from Otter Lake to ERF (U.S. Army, 2008a).

Groundwater. Two aquifers underlie JBER-Richardson, the upper, unconfined aquifer at depths as shallow as 50 feet below ground surface and a confined aquifer at depths between 200 to 400 feet below ground surface (JBER, 2010a). Note however that JBER-Richardson groundwater conditions remain poorly understood as discussed in Soil Erosion, Section 4.10.6.

Groundwater flow tends to be to the northwest (USACE, 2000).

Operable Units (OU) B and E have resulted in groundwater contamination. Chlorinated solvents at OU-B (Poleline Road Disposal Area), located between Eagle River and the Glenn Highway, have impacted both groundwater aquifers (JBER, 2010a). OU-E (Armored Vehicle Maintenance Area), near the northwestern edge of the cantonment area, has perchloroethylene (JBER, 2010a). These sites are monitored by the Environmental Restoration Program (ERP). For more information see Section 4.10.14, Hazardous Materials and Hazardous Waste.

Floodplains. E.O. 11988, *Floodplain Management*, requires federal agencies to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains. Pursuant to Air Force NEPA regulations (32 CFR 989.14(g)) any project that could be located within a floodplain or a wetland must be evaluated in an EA and supported with a finding of no practicable alternative.

Water Quality. The State of Alaska has identified a portion of Eagle River and Ship Creek between Glenn Highway and the river's mouth as Category 4a impaired water bodies for which TMDLs have been developed (ADEC, 2010b). For Eagle River, TMDLs exists for discharges of ammonia, chlorine, copper, lead, and silver due to a WWTP (ADEC, 2010b). For Ship Creek, a TMDL exists for Fecal Coliform Bacteria due to urban runoff (ADEC, 2010b).

The status of Eagle River has improved over the years. In 1996, it was listed on the Section 303(d) list for the presence of white phosphorus, followed by the delisting and placement on the Category 4b list (impaired; needing a TDML but expected to meet standards in a reasonable time) and then recategorized as a Category 2 water body (attaining some uses) (JBER, 2010a). Eagle River is no longer considered an impaired water body (JBER, 2010a).

Ship Creek is listed as a Category 4a impaired water body (impaired; not needing a TDML) for fecal coliform due to urban runoff and is listed as a Category 5 impaired water body (impaired; requires a TDML) for petroleum products due to contaminated groundwater discharges and urban runoff (JBER, 2010a). Ship Creek currently is listed as a 303d federally-impaired water body with TMDLs for fecal coliform and pending TMDLs for petroleum oil and sheen (Haas, 2011). Water quality on Ship Creek is important because any deterioration on JBER lands will affect downstream locations within the installation, Anchorage, and the Knik Arm where the

beluga are located (USAG Alaska, 2010). In addition, Ship Creek is a source of drinking water. Chester Creek and Campbell Creek are listed as Category 4a impaired water bodies for fecal coliform bacteria as a result of urban runoff (JBER, 2010a). The impaired segments of these creeks are located downstream from JBER (JBER, 2010a).

In the recent past, there is no documented discharge from McVeigh Creek to Ship Creek (Haas, 2011). It is believed to infiltrate complete in the marsh area, as even during recorded discharge times (August 2009) no discharge was noted at this location (Haas, 2011). ERF (60 acres) is identified as a Category 2 water body due to military base operations that have resulted in the deposition of white phosphorus and munitions residue. Water bodies that are placed in Category 2 are presumed to be attaining all uses. Active remediation of the ERF has been completed with the continuation of long-term monitoring in accordance with the terms of the CERCLA ROD (ADEC, 2010a). More information may be found at U.S. EPA, Water: Nonpoint Source Success Stories, available at http://water.epa.gov/polwaste/nps/success319/ak_eagle.cfm.

Drinking Water. JBER receives most of its potable water from the Ship Creek Water Treatment Plant; however, there are times based upon demand and supply that JBER also relies on up to three groundwater wells located near Moose Crossing Housing (U.S. Army, 2008a). Additionally, JBER accesses water from Anchorage Water and Wastewater Utility (AWWU) for the National Guard on JBER-Richardson (U.S. Army, 2008a). The Army has primary rights to 7 mgd, and nearly 10 mgd is diverted from the reservoir to the AWWU (U.S Army, 2008a). The water supply is treated and distributed throughout JBER-Richardson (U.S. Army, 2008a). The installation currently uses an average of 1 to 1.5 mgd and the water treatment plant is only capable of processing 6 mgd (U.S. Army, 2008a). While pipes bursting may have been a problem some time ago, upgrades to certain parts of the system have occurred to preclude failure during future earthquakes (U.S. Army, 2008a). The distribution system on post is gravity fed and in some locations is augmented with booster pumps due to low flow (U.S. Army, 2008a). If peak capacity is exceeded, or if an alternate source of water is necessary, JBER-Richardson also maintains the ability to access water from the Eklutna line through a 48- or 54-inch distribution pipe (U.S. Army, 2008a); however, because this line has only been tested once and is not well-monitored for maintenance needs, there are potential problems with distribution and access (U.S. Army, 2008a). Additionally, the installation may also use well network systems (three wells) situated near the hospital that have the capability of pumping up to 1,000 gpm (U.S. Army, 2008a). This system is sometimes used when spring water flow into Ship Creek is low (U.S. Army, 2008a).

In 2008, drinking water met or exceeded all public drinking water standards (U.S. Army, 2008a). A review of the 2011 Anchorage drinking water quality report indicates that all contaminants exist below the maximum contaminant level established for the specific contaminants (AWWU, 2011a). At the time of this PEA, updates to this determination were not readily available, but there is no indication to believe that drinking water is not meeting primary water standards.

Wastewater. There is no WWTP on JBER; all wastewater goes to the AWWU. There is one main line leaving post that carries wastewater from JBER to the AWWU. Historically, the WWTP (City-owned) could handle a maximum capacity waste stream from JBER of 3.5 to 4.0 mgd (JBER-Elmendorf accounts for approximately 60 percent of the waste stream). This is divided between three different metering stations: FRA station, Mountain View station, and Government Hill station; however, due to recent upgrades, the treatment plant may be able to accommodate up to 6.0 mgd. In 2008, it was stated that the wastewater system was in fair condition and that a system and flow analysis should be carried out to identify slow mains and possible inflow and infiltration (JBER, 2010a). At the time of this PEA, the result of such study,

if conducted, was not readily available. A review of the 2010 annual report of the AWWU indicates that capital improvement projects continue to be pursued (AWWU, 2011b).

Stormwater. JBER-Richardson has an intensive stormwater program and conducts strict enforcement of BMPs to ensure against stormwater runoff from the installation. JBER currently has applied for MS4 coverage, and currently has two multi-sector general permits to operate the 100 plus industrial sector facilities on base (Haas, 2011). Additionally, JBER has a construction general permit program which teams all projects together with installation personnel for weekly inspections to ensure compliance with SWPPPs (Haas, 2011). Stormwater generated north of D Street tends to flow into open areas; whereas, stormwater generated south of D Street is captured by catch basins, culverts, and shallow ditches and swales that direct flow to the south and eventually discharge into Ship Creek after passing through an open drainage ditch (JBER, 2010a). In 2008, the stormwater collection system south of D Street was deemed to be in good condition (JBER, 2010a). At the time of this PEA, updates to this determination were not readily available.

A private utility contractor now operates and maintains the water distribution system for JBER-Richardson (JBER, 2010a). All drinking water systems, wastewater treatment systems, and water discharge systems have been transferred to the private utility contractor. According to estimates provided by the contractor, existing capacity far exceeds current demand (U.S. Army, 2008a).

At the time of this PEA, updates to this determination were not readily available; however, upgrades to the JBER distribution system by the contractor have occurred and in conjunction with the capital improvement projects by the AWWU indicate that efforts are being made to sustain water distribution systems.

4.10.9.2 Environmental Consequences

No Action Alternative

Impacts to water resources would be minor under the No Action Alternative. JBER currently has plenty of potable and non-potable water to support its Soldiers, Families and missions.

***Cantonment Construction*.** Ongoing construction and maintenance activities could affect surface water by localized increases in erosion and runoff. Activities may include grading, excavating, and trenching, which may expose erodible soils to stormwater runoff and increase the potential for sediments to migrate to surface waters. Any construction that disturbs more than 1 acre of land would require a SWPPP. A SWPPP would prescribe measures that the installation would implement to channel stormwater and decrease turbidity and sedimentation. Construction BMPs such as sediment and silt fences would be used to ensure no sediment tracks off or flows off construction sites.

Operation of construction vehicles could cause spills of POLs and other hazardous and toxic substances, which could result in indirect impacts to surface and/or groundwater if accidentally released into the environment. The Army has implemented BMPs, a SPCC Plan, and an SWPPP to address leaks or spills of hazardous materials. With these established measures, impacts are anticipated to be less than significant.

Upgrades to water distribution systems carried out by a private contractor or AWWU would continue under the baseline. Current demand is within capacity of the current distribution systems. Wastewater would continue to be generated by JBER and drinking water would continue to be provided to JBER. No impacts to groundwater are anticipated from compliance with JBER Oplan 19-3. Adverse impacts are not anticipated to water quality or to the capacity of water distributions systems.

Range Maintenance. Continued maintenance activities at existing ranges and training areas would result in existing levels of impacts. No impacts to groundwater are from compliance with JBER Oplan 19-3. Adverse impacts are not anticipated to water quality or to the capacity of water distributions systems.

***Live-Fire Training*.** Continued live-fire training within existing ranges at current levels is not anticipated to directly affect water resources, but erosion may continue to affect nearby water ways. No impact to groundwater is anticipated as a result of compliance with JBER Oplan 19-3. Adverse impacts not anticipated to water quality or the capacity of water distributions systems.

***Maneuver Training*.** Continued implementation of BMPs occurs as it relates to the operation of vehicles and maneuver training would ensure impacts do not rise to a level of significant impact.

No impact to groundwater is anticipated from compliance with JBER Oplan 19-3. Adverse impacts are not anticipated to water quality or to the capacity of water distributions systems.

Minor impacts are anticipated. Implementation of BMPs and SWPPP measures would prevent degradation of drinking water.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Beneficial impacts are anticipated as a result of the implementation of the Alternative 1. An increase in the FRP and facilities demolition at JBER would occur as a result of Alternative 1. Older, less efficient facilities nearing the end of their life-cycle would be demolished when no longer needed to support Soldiers or their Families. The reduction in training would likely result in lesser demand on water resource and lesser potential indirect impacts from construction to below baseline conditions

Garrison Construction and Deconstruction. Alternative 1 would involve the demolition of some facilities within the existing cantonment area. Consequently, negligible to minor impacts to water resources at JBER are anticipated, including water supply and distribution, wastewater collection, and stormwater runoff.

Training Infrastructure Construction and Maintenance. No training infrastructure construction would occur as a result of reducing the number of Soldiers stationed at JBER and so no impacts to water resources at JBER ranges are anticipated. Maintenance requirements would be reduced resulting in less impacts to surface water resources.

Live-Fire Training. The number of required live-fire user days per year at JBER would drop below present levels. JBER would continue to implement its current BMPs, SPCC Plan, and SWPPP to address the ongoing effects of live-fire training on water resources. Negligible to minor impacts to water resources at JBER ranges are anticipated.

Maneuver Training. The intensity and frequency of maneuver training at JBER would drop below current levels. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at JBER. JBER would continue to implement its current BMPs, SPCC Plan, and SWPPP to address the ongoing and potential effects of maneuver training; therefore, effects to water resources from maneuver training are anticipated to be negligible to minor.

Reduced impacts are anticipated from the lesser potential to adversely affect water resources. Further analysis would be required to quantify the significance of these impacts.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be less than significant impacts to water resources anticipated as a result of implementing Alternative 2. Construction and deconstruction activities could affect surface water

by localized increases in erosion and runoff. Potential impacts would include increased overland flow and runoff and decreased percolation to groundwater due to surface compaction. Impacts from construction runoff are anticipated to be temporary. JBER has a robust stormwater monitoring and compliance program, and is prepared to handle additional capacity. Any construction and deconstruction that disturbs more than 1 acre of land would require a SWPPP including use of BMPs to minimize pollution. The wastewater collection and water distribution system may require some upgrades. This would consist of the new design of filters in the WWTP and additional piping in the water distribution system. The remainder of the water distribution infrastructure at JBER-Richardson should be adequate to meet demand.

Range Maintenance. Short-term effects to water quality could occur. Increased range maintenance activities could result in increased impacts to surface waters, though not significantly increased from current baseline conditions.

Live-Fire Training. The increase in weapons qualification training would increase lead and other ammunition materials on ranges. Runoff from impacted berms and disrupted soils is possible as the added live-fire activity may increase sediment transported to waterways draining the ranges, and ultimately to surface waters beyond the installation boundary. JBER DPW staff monitor impacts from live-fire activities and would continue to institute the required mitigations and BMPs (such as berm revegetation and regrading) to minimize effects off the firing ranges. Other chemical pollutants, such as petroleum hydrocarbon fuels or lubricants, may result in indirect effects resulting from vehicles parked at the training sites.

The risk of wildfires is anticipated to remain at about the same level as under existing conditions or slightly higher due to the increase in Soldiers using these ranges. Wildfires can generate chemical contaminants, and loss of vegetation can increase the potential for soil erosion and sediment loading to streams resulting in impacts to water quality.

Maneuver Training. Additional traffic on the range road network and stream crossings during maneuver training may contribute to increased sedimentation and turbidity in water bodies. Efforts may be considered to reinforce stream crossings and monitor those areas for decreased water quality. Further, bivouac sites in the training area may also need to be monitored and maintained more closely to ensure against stormwater runoff that may stem from the effects of increased Soldier use throughout those areas.

Increased maneuver training at all sites would increase the use of fuels, solvents, and other hazardous and toxic substances, which might result in indirect impacts to surface and/or groundwater if accidentally released into the environment. However, implementing BMPs including SPCC would minimize potential impacts resulting from leaks or spills of hazardous materials. Impacts are anticipated to be negligible or minor.

No impact to groundwater is anticipated from compliance with JBER Oplan 19-3. Adverse impacts are not anticipated to water quality or to the capacity of water distributions systems.

Overall less than significant impacts are anticipated, although adverse effects to surface waters may increase slightly above baseline conditions. Further analysis would be required to quantify these impacts.

4.10.10 Facilities

4.10.10.1 Affected Environment

The ROI for this VEC is JBER facilities that could be affected by impacts from the Proposed Action.

Facilities and infrastructure at JBER includes Family housing; a road network; community support facilities such as a Child Development Centers, police station, credit union, post offices, elementary schools, shops; a community hospital; outdoor recreational facilities; and installation support facilities such as airspace and airfields, and training and range facilities.

All utility services provided to USAG Alaska were privatized in August of 2008. The power distribution system at USAG FWA is being systematically upgraded, and substantial portions of the power system will be completely replaced in 2010.

In 2007, former FRA and former Elmendorf Air Force Base developed a Joint Base Housing Requirements and Market Analysis to assess the private sector housing market's potential to accommodate military Families through transition to privatization and for the military to achieve the minimum number of authorized housing units from 2007 to 2012 due to BRAC Commission recommendations (BRAC 2005) (U.S. Army, 2008a). During this transition period, both JBER-Richardson and Elmendorf Air Force Base were projecting growth in mission and personnel (Table 4.10-13) (U.S. Army, 2008a). The study concluded that based on current housing inventories there was an overall surplus of Family housing units (when combining the available number of housing units for both installations) to accommodate known growth through 2012 (U.S. Army, 2008a). When reviewing the requirements for unaccompanied Soldiers, the study identified a total deficit of 798 housing units (Table 4.10-14) (U.S. Army, 2008a).

Table 4.10-13. Total Military Family Housing Units Requirement

Component	JBER-Elmendorf	JBER-Richardson
	Housing Requirements and Market Analysis Through 2012	Housing Requirements and Market Analysis Through 2012
Authorized Permanent Party	6,625	6,959
Accompanied Personnel	4,264	4,091
Unaccompanied Personnel	2,361	2,868
Accompanied Personnel	4,264	4,091
Military Couples & Army voluntary Separations	277	352
Military Families	3,987	3,739
In Military Housing	423	385
In Private Sector Housing	3,564	3,354
Homeowners	1,636	502
Renters	1,928	2,852
Suitable Rental Market Share	1,204	1,377
Not Allocated Suitable Housing	724	1,475
Military Family Floor Housing Requirement	423	385
Private Sector Shortfall	724	1,475
Total Military Family Housing Requirement	1,147	1,860
Military Family Housing Inventory	2,022	1,245
Deficit/(Surplus)	(875)	615

Source: U.S. Army, 2008a.

Table 4.10-14. Total Unaccompanied Personnel Housing Requirement

Component	2012		
	JBER Elmendorf	JBER Richardson	Total
Unaccompanied Personnel	2,361	2,868	5,229
In Military Housing	1,010	2,511	3,521
In Private Sector Housing	1,351	357	1,708
Homeowners	310	-	1,708
Renters	1,041	357	1,398
Suitable Rental Market Share	839	283	1,122
Not Allocated Suitable Housing	202	74	276
Unaccompanied Personnel Floor Housing	1,010	2,511	3,521
Private Sector Shortfall	202	74	276
Total Unaccompanied Personnel Housing Requirement	1,212	2,585	3,797
Unaccompanied Housing Inventory	831	2,168	2,999
Deficit/(Surplus)	381	417	798

Source: U.S. Army, 2008a.

Currently, there is a shortage of on base housing for enlisted Soldiers; however, current programmed construction for new barracks is being pursued on JBER-Richardson to address this shortage in support of the 4/25 Airborne BCT (Dougan, 2011).

JBER includes about 74,000 acres of land of which JBER-Richardson consists of 61,500 acres (USARAK, 2004). About 90 percent of JBER-Richardson is dedicated to training of which 60 percent is designated as maneuver training area and 30 percent is designated as ranges or impact areas (USARAK, 2005). The quality and condition of Army ranges and training lands are managed and monitored as a part of the Army's Sustainable Range Program which includes the Range and Training Land Program and the ITAM program (U.S. Army, 2008a).

4.10.10.2 Environmental Consequences

No Action Alternative

Impacts to facilities would be minor under the No Action Alternative. JBER would continue to pursue funding for consolidation of existing facilities and already programmed construction projects to replace non-standard and aging facilities. No additional Soldiers would be stationed at JBER-Richardson so no cantonment construction is required. The garrison has an adequate quantity of facilities to support the existing units' requirements for living, operations, and maintenance. The majority of these facilities are 1950's era and not to current standards. Some construction would occur on an as needed basis in the future. Continued maintenance of range facilities would occur.

The number of required live-fire and maneuver user days per year at JBER-Richardson would continue at present levels on existing ranges. Therefore, no changes are anticipated in the amounts of ammunition that would be used or in the generation of UXO and lead contamination on training ranges. With the continued implementation of Army SOPs/BMPs, impacts are anticipated to continue to be minor.

Minor facilities impacts are anticipated as a result of the normal wear and tear that occurs with ongoing use of facilities.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Minor impacts are anticipated as a result of the implementation of the Alternative 1. An increase in the FRP and facilities demolition at JBER would occur as a result of Alternative 1. Older, less efficient facilities nearing the end of their life-cycle would be demolished when no longer needed to support Soldiers or their Families to save the Army on maintenance and energy requirements. Facility usage and availability for the remaining population would not be affected. Minor long-term effects are anticipated as a result of required building demolition, solid waste disposal, and site recapitalization, and the repurposing of existing facilities to accommodate different Army needs as part of force reduction. A reduction scenario would not result in the alteration or relocation of existing utility systems or expansion of existing installation facilities. A reduction in troop strength would impact the local housing community, on-post support services, the barracks program, and associated Army civilian staffing requirements. A troop reduction would cause a reduction in the requirements for on and off-post housing and eliminate the need for construction of additional housing. Additional new range construction would likely not occur given the reduction in troop strength as a result of Alternative 1. A reduction of Soldiers would lead to decreased training range use and a decrease in ammunition and generation of lead and other materials on ranges and within impact areas. Long-term impacts would include the decrease in use of maneuver areas during large brigade-sized and battalion-sized exercises.

Minor impacts may occur with regards to infrastructure at JBER. In the short term, many projects are already programmed and planned to facilitate continued needs of the military population at JBER including the specific needs of the 4/25 Airborne BCT. These plans would need to be re-evaluated if decisions were made to reduce forces at JBER. Further analysis would be required to quantify these impacts.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would less than significant impacts to facilities. Increased Soldier strength of 1,000 would be reflected through increased usage throughout the cantonment area.

***Cantonment Construction*.** There is not currently enough vacant space at JBER-Richardson to fully accommodate the addition of 1,000 Soldiers. As noted in the 2007 study, JBER-Richardson has a deficit number of housing units for unaccompanied Soldiers. Construction at the main cantonment area would occur as infill to accommodate these Soldier stationing scenarios. Additional Battalion and Company operations facilities would be required; other construction may include Brigade Headquarters, storage, maintenance, and organizational parking to bring aging and non-standard facilities up to current standards. Projects to replace these facilities are programmed and waiting funding. These facilities would be tied in to existing utilities and in JBER-Richardson structure, but some upgrades to the water distribution and wastewater collection system would be required. Additionally, the WWTP would require minor upgrades.

The potential difficulties in providing adequate housing on the installation itself are coupled with a lack of potential new housing sites outside the installation. JBER is surrounded by park land, the City of Anchorage, the Town of Eagle River, and assorted private land holdings. Furthermore, JBER is a major competitor for space in the Anchorage area and is currently growing. According to the Joint Housing Market Analysis (HMA) cited above, there may be a shortfall in housing units available to accommodate both unaccompanied Soldiers and Soldiers with Families. For the 1,000 Soldier increase, more than half of the Soldiers may be

accompanied by Families and the remainder would be unaccompanied based on the current planning rations. At JBER, 48 percent of sponsors have children at 1.6 children per sponsor and 52 percent are married (Dougan, 2012). The additional housing requirements for both accompanied and unaccompanied Soldiers may need to be absorbed by both the military and surrounding areas, which is consistent with DoD policy. The surrounding areas of Municipality of Anchorage and MatSu Valley have sufficient vacant housing units as discussed in the socioeconomics section that follows.

Increased training on JBER's existing ranges and training areas would result in increased maintenance of these facilities and maneuver areas.

Less than significant impacts would occur as a result of the effect additional Soldiers may have on JBER's current plans for programmed construction and demolition. Further analysis would be required to quantify these impacts.

4.10.11 Socioeconomics

4.10.11.1 Affected Environment

The ROI consists of JBER and the surrounding communities, specifically the Municipality of Anchorage. The social and economic environment of the communities surrounding JBER is tied to and/or influenced by the state and national climate, which is multifaceted. Local factors may result in deviations from the state/national trends.

Population and Demographics. The 2010 Census population for the State of Alaska was 710,231, a 13.3 percent increase from 2000 (U.S. Census, 2010a) (Table 4.10-15). As of 2010, the predominant races in the State of Alaska are Caucasian, American Indian, and Alaska Natives (U.S. Census, 2010b). Estimated minority population in the State of Alaska is 35.9 percent in 2010 (U.S. Census, 2010c). The racial and ethnic composition of the ROI is presented in Table 4.10-16.

In 2010, the MoA had a total population of 291,826, with the predominant race being Caucasian, and other races having a larger presence (African American, Asian, and American Indian and Alaska Native) (U.S. Census, 2010b). These percentages closely track the trend of the entire state, except for having a decreased percent of American Indians and Alaska Natives.

Table 4.10-15. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Alaska	710,231	+ 13.3
Anchorage	291,826	+ 12.1

Source: U.S. Census Bureau, State and County Quick Facts, available at http://quickfacts.census.gov/qfd/index.html (last accessed February 23, 2011).

Table 4.10-16. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Alaska	64	3	15	5	5	7	1
Anchorage	63	5	8	8	8	7	1

Information provided for the Municipality of Anchorage includes the census tracts for the communities of Eagle River, Chugiak, Eklutna, Peters Creek, and Birchwood (U.S. Census, 2010a). Specific 2010 populations for these communities by census tract is as follows:

- Census Tract 1.01 (Peters Creek/Eklutna) 5,736
- Census Tract 1.02 (Chugiak and Birchwood) 5,259
- Census Tract 2.01 (N. Eagle River, West of Glenn Highway) 4,110
- Census Tract 2.02 (N. Eagle River, East of Glenn Highway) 5,947
- Census Tract 2.03 (Eagle River) 10,549
- Census Tract 2.04 (Hiland and Eagle River Valley) 3,381 (Mat-Su Agency Partnership, 2011)

Eagle River and other communities are within the Municipality of Anchorage, but Eagle River directly borders the installation to the east with Chugiak located to the northeast of Eagle River and the other listed communities located further to the northeast/east (State of Alaska, 2012).

A comparison of population breakdown for youth and elderly are similar between the state and Anchorage, with approximately 26 percent under 18 years of age and 7 (Anchorage) to 8 (Alaska) percent over 65 years (U.S. Census, 2010b).

The current estimated JBER population of all military employees (uniformed and government civilians) is 38,685. The Army-related population of JBER is measured in three different ways. The daily working population is 6,861, and consists of full-time Soldiers and Army civilian employees working on post. The population that lives on JBER-Richardson consists of 4,310 Soldiers and 3,875 dependents, for a total on-base resident population of 8,185. Finally, the portion of the ROI population related to JBER is 6,408 and consists of Soldiers, Army civilian employees, and their dependents living off post.

Employment, Income and Housing. The main economic drivers for the State of Alaska are the oil industry, tourism (state), and the federal government, with each sector accounting for about one-third of the employment opportunities in Alaska (ADLWD, 2012a). Alaska's largest private employer is Providence Health & Services (ADLWD, 2012b).

Alaska trends for 2012 indicate modest job growth (1.2 percent or 3,900 jobs) from 2011 (ADLWD, 2012a). Anchorage's economy is forecasted to grow by 0.6 percent (1,000 jobs) (ADLWD, 2012a). Construction employment is expected to continue to decline with commercial and residential construction being very weak, although public construction is anticipated to remain strong (e.g., highway, military bases) (ADLWD, 2012a). Health care jobs would continue to increase, although future federal budget cuts may impact this sector as federal dollars pay over a third of Alaska's health bill (ADLWD, 2012a). Other sectors (federal/state government, business and professional services) may continue to sustain their job counts; however, state government jobs tend to be affected by the oil industry and federal spending rather than isolated factors within the state government (ADLWD, 2012a). Nearly 90 percent of the state's unrestricted government funds in 2010 were from oil-related taxes/royalties (ADLWD, 2012a).

Local government employment is likely to continue to decrease marginally in 2012 (ADLWD, 2012a). JBER, the MoA, and the Anchorage School District are reducing their budgets (ADLWD, 2012a). The local economies are partially dependent on military bases in their communities as a source of revenue (ADLWD, 2012a).

Three of the top 10 industries that benefit from federal expenditures fit within the health care sector, which is currently experiencing job growth in Anchorage (U.S. Army, 2011).

Potential challenges for Alaska in the future include declining oil production and decreased federal expenditures; the latter is anticipated to affect Alaska to a greater extent than the rest of the Nation (ADLWD, 2012a).

Compared to 2000, the 2009 employment (private nonfarm) increased in Anchorage (28.3 percent) and overall in the State of Alaska (23.4 percent). Total private nonfarm employment for Anchorage in 2009 was 144,656. Total private nonfarm employment for the State of Alaska was 252,882.

The State of Alaska unemployment rate was 7.5 percent in September 2012) which is below the national average of 7.8 percent as of September, 2012. The MoA is lower than the Alaska average, with a 6.1 unemployment rate for November 2011 (USDL, 2011a). As compared to the Nation, Alaska only experienced job losses in 2009, whereas the Nation had job losses in 2008, 2009, and 2011, with 2009 experiencing severe job losses (ADLWD, 2012a).

The official poverty rate for the Nation in 2010 was 15.1 percent, which is up from 14.3 percent in 2009 (U.S. Census, 2010f). Alaska is one of the states with the lowest poverty rate averages, with 9.5 percent of the population living in poverty (based on 5-year averages) from 2006 to 2010. The 2011 federal poverty guidelines list the poverty level for Alaska at $13,600 for an individual and $27,940 for a family of four (DHHS, 2011).

Based on a 5-year average (2006-2010), the Alaska median household income is $66,521, with a per capita income of $30,726 (Quick Facts). In Anchorage (including adjacent communities, e.g., Eagle River-Chugiak), the median household income is $73,004 and per capita is $34,678 (Alaska Community Database Community Information Summaries, 2012).

Based on a 5-year average (2006-2010), the estimated Alaska population living in poverty is 9.5 percent with 6.6 percent of this total identified as Families. Based on a 5-year average (2006-2010), the estimated Anchorage population living in poverty is 7.9 percent with 5.8 percent of this total identified as Families.

The median cost of a home in Alaska is $232,900, which is higher than the national average of $185,200 (U.S. Census, 2009a). The most populated municipality in Alaska is Anchorage. In 2010, the MoA had a total of 113,032 households, with 107,332 being occupied and 5,700 vacant (U.S Census, 2010d). In the adjacent Matanuska-Susitna, which includes the cities of Palmer and Wasilla, there are approximately 9,500 units of vacant housing (U.S. Census, 2010e).

According to the JBER housing community profile report, occupancy rates at JBER-Elmendorf were between 97 to 98 percent and between 92 to 98 percent for JBER-Richardson (Parsons, 2009). Housing construction at JBER occurred in the early 1940s and 1950s with additional construction occurring in the 1970s (Parsons, 2009). New construction at JBER-Elmendorf occurred in 2005 following the completion of privatization of Family housing in 2004 (Parsons, 2009). The private developer, Aurora, manages all related assets on JBER (e.g., construction, maintenance, renovations).

In 2007, former FRA and former Elmendorf Air Force Base developed a Joint HMA to assess the private sector housing market's potential to accommodate military Families through

transition to privatization and for the military to achieve the minimum number of authorized housing units from 2007 to 2012 (U.S. Army, 2008a). The study concluded that, based on current housing inventories, there was an overall surplus of Family housing units (when combining the numbers for both installations) to accommodate known growth through 2012, but a deficit of housing units for unaccompanied Soldiers (U.S. Army, 2008a).

Currently, there is a shortage of on-base housing for enlisted Soldiers, but current programmed construction for new barracks is being pursued on JBER-Richardson to address this shortage in support of the 4/25 Airborne BCT (Dougan, 2011); however, DoD policy is to rely on the private sector as the primary source for housing (Parsons, 2009).

A recent study indicates that housing shortages may exist within the Municipality of Anchorage if the population continues to increase as projected over the next 20 years, although adjacent Chugiak-Eagle River would not experience housing shortages (MoA, 2012). On the other hand, if development continues within the MoA at the historic rate, there is anticipated to be a shortage of buildable lands whereas this shortage would not exist in Chugiak-Eagle River. However, if the price of housing increases within the MoA, people may decide to live in Chugiak-Eagle River and/or the Matanuska-Susitna (Mat-Su) Valley despite the present availability of housing within the MoA. The study identified potential areas for future residential development in nearby Chugiak-Eagle River, with the focus on lands held/owned by Eklutna Inc. In specific, "Powder Reserve Tract B" could be developed as a residential area and would abut JBER's eastern boundary (MoA, 2012).

Schools. JBER-Richardson children attend Ursa Major Elementary School, Ursa Minor Elementary School, Gruening Middle School, and Eagle River High School, which are part of the Anchorage School District (JBER, 2010a).

Elementary, middle, high, and charter schools are located within 1 mile of the JBER border (ASD, 2012a). Elementary schools include Aurora, Government Hill, Mount Iliamna, Mount Spurr, Mountain View, Muldoon, Orion, Tyson, Ursa Major, Ursa Minor, and Wonder Park (ASD, 2012b). Middle schools include: Clark (ASD, 2012b). High Schools include: Bartlett. Charter Schools include: Alaska Native Cultural (grades K-7), Eagle Academy (K-6), and Winterberry (K-8) (ASD, 2012b).

Recent reporting indicates that enrollment at all schools is near projected levels for fall 2011, with under enrollment reported for elementary schools, middle schools, and charter schools. From fall 2010 to fall 2011, there was a decrease in total enrollment by 0.54 percent (263 students). Fall 2011 projected enrollment also fell short of the projected numbers by 368 students. Only one of the schools is operating at full/over program capacity (Clark, at 107 percent capacity). Other schools with reported information indicate the ability to absorb additional students, specifically: Aurora (90 percent), Government Hill (90 percent), Mountain View (82 percent), Mt. Spurr (89 percent), Muldoon (90 percent), Orion (90 percent), Tyson (97 percent), Ursa Major (83 percent), Ursa Minor (92 percent), Wonder Park (86 percent), and Bartlett (80 percent) (ASD, 2012c).

Public Services, Health and Safety.

Police Services. Police services include two state trooper posts, a Federal Bureau of Investigation center, a district office for the U.S. Marshal Service, and Ted Stevens Anchorage International Airport Police and Fire Department (JBER, 2010a). One military police station is located within the main cantonment, north of the Fireweed neighborhood. (JBER, 2010a).

Fire and Emergency Services. Fire services include JBER-Richardson Fire Department, JBER-Elmendorf Fire Department, Anchorage Fire Department, and Ted Stevens Anchorage

International Airport Police and Fire Department (JBER, 2010a). The Anchorage Fire Department operates out of thirteen fire stations (JBER, 2010a).

Medical Facilities. There are several health care options in Anchorage, including Alaska Regional Hospital and Providence Alaska Medical Center, both with emergency room capabilities. Many other healthcare clinics and private practice offices are within Anchorage. A Department of Veterans Affairs Hospital is located near the Muldoon entrance of JBER and an Anchorage Veterans Center (also part of the Veterans healthcare system) is located on Tudor, south of JBER (VA, 2012). Military healthcare facilities include the U.S. Army medical clinic at JBER-Richardson, the Air National Guard Medical Squadron, and the 673d Medical Group at JBER (JBER, 2010a).

Family Support Services. Child development centers, child care centers, schools, and playgrounds are generally located within close proximity to the residential areas (PACAF, 2011). Children and youth programs are offered within the cantonment area at JBER-Richardson as part of The Family and Morale, Welfare, and Recreation Center (MWR) (JBER, 2010a). JBER-Elmendorf also has a second MWR facility that is available for use.

Recreation Facilities. Recreational facilities are mostly located within the cantonment area, including: a large physical fitness center, a theater, golf course (not within the cantonment area), cross country skiing and running trails, and a small ski hill (JBER, 2010a). JBER-Elmendorf also has these same/similar facilities that are available for use. Additional recreational opportunities are available on base and discussed further in "Biological Resources" and "Land Use Conflicts and Compatibility" herein.

Environmental Justice. E.O. 12898, *Federal Actions to address Environmental Justice in Minority and Low-Income Populations*, requires federal agencies to ensure that federal actions do not disproportionately impact low income and/or minority communities. E.O. 13045 requires federal agencies to identify and assess environmental health risks and safety risks that may disproportionately affect children and ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.

Residential areas border JBER along the west (Government Hill, Mountain View, Northeast Anchorage, and Scenic Foothills) and east (communities of Eagle River, Chugiak, Birchwood, Peters Creek and Eklutna to the northeast) (PACAF, 2011). A review of all census tracts within the communities that border JBER indicate that a portion of Mountain View (Tract 6) is more than 50 percent minority (non-Caucasian African American, Asian, American Indian and Alaska Native, and Native Hawaiian and Pacific Islander), of which 21 percent of the minority population identify themselves as Hispanic/Latino. The largest minority group within Tract 6 is Asian followed by American Indian and Alaska Native and then African Americans with large populations. A review of census block groups within Tract 6 indicates that seven out of eight census blocks are between 53 to 61 percent minority.

The minority population of Census Tract 8.01, also within the community of Mountain View, is under 50 percent; however, within Census Tract 8.01, Block Group 6 is more than 50 percent minority of which 24 percent of the minority population identify themselves as Hispanic/Latino. The largest minority group within Block Group 6 is Asian followed by American Indian and Alaska Native and then African Americans.

4.10.11.2 Environmental Consequences

No Action Alternative

JBER anticipates a beneficial socioeconomic impact under the No Action Alternative. JBER's operations would continue to be a beneficial source of regional economic activity. No adverse impacts to population, employment, income, housing, public and social services, public schools, public safety, or recreational activities are anticipated from the status quo. Changes in population, employment, income, and housing would be anticipated to continue in accordance with historic/present rates.

Environmental Justice. The No Action Alternative is not anticipated to disproportionately impact low income and/or minority communities, and will not have any significant impacts.

Alternative 1: Force Reduction (up to 4,300[2] Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of approximately 4,300 military employees (Soldiers and Army civilian employees), each with an average annual income of $58,768[3]. In addition, this alternative would affect an estimated 2,422 spouses and 4,167 dependent children, for a total estimated potential impact to 6,589 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 10,930.

Based on the EIFS analysis, there would be no significant impacts for sales volume or income. There would be significant impacts for employment and population. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.10-17. Table 4.10-18 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.10-17. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	18.14	17.02	9.94	5.46
Economic Contraction Significance Value	- 12.89	- 10.77	- 3.67	- 2.08
Forecast Value	- 2.93	- 2.93	- 3.90	- 3.7

Table 4.10-18. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- $328,091,700	- $296,341,200	- 4,936 (Direct) - 970 (Indirect) - 5,906 (Total)	- 10,809
Percent	- 2.93 (Annual Sales)	- 2.93	- 3.90	- 3.7

[2] Calculations used a number of 4,341 Soldiers and civilians for estimating socioeconomic impacts. This number was derived by assuming the loss of the 4/25 Airborne BCT (roughly 3,450 Soldiers), 30 percent of the installation's other Combat Support Soldiers not associated with the BCT, and up to 15 percent of the civilian workforce. As discussed in Chapter 3, this number is rounded to the nearest hundred personnel when discussing impacts of Alternative 1.

3 This number includes an adjustment for locality pay that is received by Soldiers living and working in Alaska.

The total annual loss in volume of direct and secondary sales in the ROI represents an estimated -2.93 percent change from the current total sales volume of $11.19 billion within the ROI. Regional income would decrease by 2.93 percent. While approximately 4,300 Army Soldier and civilian employee positions would be lost within the ROI as a direct result of the implementation of Alternative 1, EIFS estimates another 595 military contract service jobs would be lost, and an additional 970 job losses would occur indirectly from a reduction in demand for goods and services. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 5,906 jobs, or a -3.90 percent change in regional non-farm employment. According to EIFS, this is a significant impact. The total number of employed non-farm positions in the ROI is estimated to be 151,517. A significant population reduction of 3.7 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 292,000 people (including those residing on JBER) that live within the ROI, 10,930 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes Civilian and military employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.10-19 shows the total projected economic impacts, based on the RECONS model, that would be projected to occur as a result of the implementation of Alternative 1.

Table 4.10-19. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- $142,797,446 (Local) - $229,239,065 (State)	- $203,032,757	- 4,633 (Direct) - 341 (Indirect) - 4,974 (Total)
Percent	- 1.26 (Total Regional)	- 2.01	- 3.28

The total annual loss in volume of direct and secondary sales in the ROI represents an estimated -1.26 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 1.67 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately $16.05 million as a result of the loss in revenue from sales reductions, which would be $3.63 million less in lost state sales tax revenue that projected by the EIFS model. Regional income is projected by RECONS to decrease by 2.01 percent, less than the 2.93 percent reduction projected by EIFS. While approximately 4,300 Army Soldier and civilian positions would be lost within the ROI, RECONS estimates another 292 military contract and service jobs would be lost directly as a result of the implementation of Alternative 1, and an additional 341 job losses would occur from indirect reduction in demand for goods and services in the ROI as a result of force reduction. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 4,974 jobs, or a -3.28 percent change in regional employment, which would be 0.62 percentage points less than projected by the EIFS model.

When assessing the results together, both models predict a net decrease in economic activity of roughly the same order of magnitude within the ROI.

Population and Demographics. JBER anticipates a substantial reduction in military population and training throughput as a result of the implementation of Alternative 1. Alternative 1 would result in the loss of up to 4,300 military employees (Soldiers and Army civilian employees). The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 10,930 military employees and their dependents. Additional discussion of how population loss would affect employment, income, and housing is discussed in the following subsection.

Employment, Income and Housing. Alternative 1 would increase the availability of barracks space for unaccompanied personnel and the increase in the availability of Family quarters. Those outcomes would likely decrease the off-post demand for rentals and purchases of housing. Considering the results of the Joint HMA, this reduction would tend to resolve concerns of housing shortages both on-base and off-base. JBER anticipates long-term, significant adverse affects in the Municipality of Anchorage and in the smaller communities of the ROI.

Schools*.* JBER anticipates the potential for significant adverse impacts to Ursa Major and Ursa Minor elementary schools. It is likely that these schools have a large population of military dependent children, but specific numbers of military-connected students are not readily available.

Public Services, Health and Safety*.* Under Alternative 1, the anticipated population decrease at JBER-Richardson would likely reduce the demand for law enforcement services, fire and emergency services, and medical care services on that part of the installation and off post to some degree. Despite the potential decreased demand for these services under Alternative 1, these public services would still be available to the remainder of the community even if at a reduced scope because police, fire, and medical services are essential. JBER anticipates less than significant impacts to public health and safety under Alternative 1.

Family Support Services*.* Under Alternative 1, JBER anticipates a reduced demand for MWR and other Army community service programs on JBER-Richardson, although the MWR facility on JBER-Elmendorf would continue to exist and be utilized by the JBER-Elmendorf population and the remainder of the JBER-Richardson population. JBER anticipates less than significant impacts to Family support services under Alternative 1.

Recreation Facilities*.* Use of recreation facilities on post would likely decline under Alternative 1. They would continue to be operated at little or no cost and would continue to be used by the JBER-Elmendorf population and the remainder of the JBER-Richardson population.

Environmental Justice*.* Under Alternative 1, JBER anticipates no disproportionate adverse impact to minorities, economically disadvantaged populations, or children. Although census tracts near the boundary of JBER (e.g., Tract 6 and Tract 8) have a large population of minorities, there would be no disproportionate impact under Alternative 1. Job losses would likely be felt across the ROI, affecting all income levels and many economic sectors.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Economic Impacts. Alternative 2 would result in the increase of up to 1,000 Soldiers, each with an average annual income of $58,768. In addition, this alternative would affect an estimated 558 spouses and 960 dependent children, for a total estimated potential impact to 1,518

dependents. The total population of military employees and their dependents directly affected by Alternative 2 is projected to be 2,518 Soldiers and their dependents.

Based on the EIFS analysis, there would be no significant impacts for increases to sales volume, income, population, or employment. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.10-20. Table 4.10-21 presents the projected economic impacts to the region for Alternative 2 as assessed by the Army's EIFS model.

Table 4.10-20. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 2

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	18.14	17.02	9.94	5.46
Economic Contraction Significance Value	- 12.89	- 10.77	- 3.67	- 2.08
Forecast Value	0.67	0.67	0.90	0.85

Table 4.10-21. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	$75,579,770	$68,265,660	1,137 (Direct) 223 (Indirect) 1,360 (Total)	2,490
Percent	0.67 (Annual Sales)	0.67	0.90	0.85

The total annual gain in volume of direct and secondary sales in the ROI represents an estimated 0.67 percent change in total sales volume from the current sales volume of $11.19 billion within the ROI. Regional income would increase by 0.67 percent. While 1,000 new Soldiers gained within the ROI, EIFS estimates another 137 direct contract service jobs would be gained, and an additional 223 jobs would be created as a result of increases in demand for goods and services in the ROI as a result of the indirect impacts of force increases. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 1,360 jobs, or a 0.90 percent change in regional employment. The total number of employed non-farm positions in the ROI is estimated to be 151,517. A population increase of 0.85 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 292,000 people (including those residing on JBER) that live within the ROI, 2,518 Soldiers and their dependents would begin to reside in the area following the implementation of Alternative 2. This would lead to an increase in demand for housing, and decreased housing availability in the region. This would lead to a slight increase in median home values.

Table 4.10-22 shows the total projected economic impacts, based on the RECONS model, that would be projected to occur as a result of the implementation of Alternative 2.

Table 4.10-22. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Rational Threshold Value	Sales Volume	Income	Employment
Total	$31,838,887 (Local) $51,112,376 (State)	$45,269,280	1,065 (Direct) 76 (Indirect) 1,141 (Total)
Percent	0.27 (Total Regional)	0.45	0.75

The total annual gain in volume of direct and secondary sales in the ROI represents an estimated 0.27 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 0.40 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would increase by approximately $3.06 million as a result of the gain in revenue from sales reductions, which would be $1.44 million less in additional state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to increase by 0.45 percent, slightly less than the 0.67 percent increase projected by EIFS. While 1,000 Soldier positions would be gained within the ROI, RECONS estimates another 1,065 direct contract and service jobs would be gained, and an additional 76 jobs would be created indirectly from an increase in demand for goods and services in the ROI. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 1,141 jobs, or a 0.75 percent change in regional employment, which would be 0.08 percentage points less than projected by the EIFS model.

When assessing the results together, both models predict beneficial economic impacts and a net increase of economic activity of roughly the same order of magnitude within the ROI.

Population and Demographics. Under Alternative 2, JBER anticipates a minor increase in military population and training throughput. Alternative 2 would result in the increase of up to 1,000 Soldiers. The total population of military employees and their dependents directly affected by Alternative 2 is projected to be 2,518 Soldiers and their dependents. Additional discussion of how population loss would affect employment, income, and housing is discussed in the following subsection.

Employment, Income and Housing. Alternative 2 would likely add to the pool of unaccompanied Soldiers and/or Families that would want to live on post. Barracks space for unaccompanied personnel and quarters for Families would not be available due to the current shortage; however, current construction efforts may serve to lessen the potential increase in the unaccompanied housing deficit. Also, the demand for off-post rentals and purchases of housing would likely increase. Although the recent Anchorage HMA suggests potential housing and buildable land shortages over the next 20 years, any increased demand may serve to increase the need for services, such as construction services, which are currently seeing job losses in the current economic climate. JBER anticipates long-term, minor beneficial impacts in the Municipality of Anchorage and in the smaller communities of the ROI.

Schools. JBER anticipates the potential for minor impacts to schools under Alternative 2. Although there would be an increased need due to increased dependents at JBER-Richardson, only one of the schools in close proximity to JBER is operating at full/over program capacity. Nevertheless, Alternative 2 would further challenge local school districts to accommodate this increase within the existing budgetary constraints, if any.

Public Health and Safety. Under Alternative 2, the anticipated population increase at JBER would likely increase the demand for law enforcement services, fire and emergency services, and medical care services on and off post to some degree. It is possible that increased demand for these services could lead to decreased services if existing budgets are already limited. However, services available at JBER could serve to lessen any adverse impact on these services within the Municipality of Anchorage and surrounding communities. JBER anticipates minor impacts to public health and safety under Alternative 2.

Family Support Services. Under Alternative 2, JBER anticipates an increased demand for MWR and other Army community service programs on post. The demand for Family support services off post would likely increase also. However, additional services may be available on JBER-Elmendorf, which could be used by Soldiers and their dependents. JBER anticipates minor impacts to Family support services under Alternative 2.

Recreation Facilities. Use of recreational facilities on post would likely increase under Alternative 2. JBER anticipates that utilization increases would be minor. Some facilities could become crowded and less user-friendly during peak use hours. However, additional facilities located on JBER-Elmendorf could be used by Soldiers and their dependents. Overall, the impact would be less than significant.

Environmental Justice. Under Alternative 2, JBER anticipates no disproportionate adverse impact to minorities, economically disadvantaged populations, or children. Although census tracts near the boundary of JBER (e.g., Tract 6 and Tract 8) have a large population of minorities, there would be no disproportionate impact under Alternative 2. The impacts of the anticipated growth of JBER would be felt throughout the ROI and across all populations.

4.10.12 Energy Demand and Generation

4.10.12.1 Affected Environment

The ROI for this VEC is JBER infrastructure and supporting infrastructure outside of JBER, which could be affected by impacts at JBER.

Utilities are privatized on JBER-Richardson. As of 2008, a private contractor assumed ownership, operations, and maintenance of the heat distribution, electrical distribution, potable water distribution, and wastewater collection utility systems at JBER-Richardson (JBER, 2010a). The contractor is responsible to comply with all applicable federal, state, and local laws and regulations and installation-specific requirements in performing its duties under its privatization contract (JBER, 2010a). A separate independent contractor retains partial ownership of the natural gas infrastructure (JBER, 2010a).

Electrical power is supplied to JBER-Richardson by Anchorage Municipal Light and Power (JBER, 2010a). As of 2008, there were about 30 MW of capacity available to JBER-Richardson, with higher demand in the winter. The installations largest load in the winter is about 15 MW (JBER, 2010a).

Natural gas distribution systems on JBER-Richardson are owned, operated, and maintained by and belong to three independent contractors and each service specific portions of JBER-Richardson (JBER, 2010a). Two contractor lines and distribution systems have sufficient capacity and are considered in good condition (JBER, 2010a). The third contractor lines are considered in good condition but lacking cathode protection (JBER, 2010a).

The energy supply and utilities infrastructure at JBER-Richardson is more than sufficient to meet existing demands (U.S. Army, 2008a). Additionally, the third contractor continues to assess opportunities for upgrades or replacements to ensure cleaner and more efficient use and distribution of power (U.S. Army, 2008a).

4.10.12.2 Environmental Consequences

No Action Alternative

The No Action Alternative would result in minor effects to existing energy demand and utilization by JBER. JBER would continue to look for ways to reduce energy use and increase energy efficiency as a result of this alternative.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Long-term beneficial impacts to the power generation system are anticipated resulting from the proposed force reduction. Decreases associated with demand on the power plant, energy distribution lines, and infrastructure would result. The overall influence of the force reduction is anticipated to result in a decrease of regional power demand. Less energy resources, including coal and fuel, would be consumed.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

JBER would experience minor impacts from the additional Soldiers and Family members. The installation's current energy infrastructure would be able to accommodate the addition of 1,000 Soldiers and more than 1,500 additional Family members. An increase in population associated with this alternative would increase demand on the power plant, energy distribution lines, and infrastructure. Given that privatization resulted in technology upgrades and increased efficiency in power and heat distribution; the overall influence that Army growth is anticipated to have to regional power demand and generation capability is anticipated to be minimized to a minor impact. There may be additional long-term energy demand in training areas; however, demand is anticipated to be slight and inconsequential compared to system capacity. Current energy conservation efforts at JBER would likely reduce any net increase in energy use. In addition, a private contractor has committed to improve infrastructure on the installation. These upgrades to the power generation capability and distribution system should be able to accommodate the increased demands on the power plant, energy distribution lines, and infrastructure that are presented by this population increase.

4.10.13 Land Use Conflicts and Compatibility

4.10.13.1 Affected Environment

The ROI for this VEC is JBER and surrounding areas along the installation boundary or within the area of potential impacts of the Proposed Action.

JBER-Richardson is located in south-central Alaska, approximately 7 miles northeast of downtown Anchorage and it is situated between two prominent natural features: the Knik Arm of the Cook Inlet to the north and the Chugach Mountains to the east (JBER, 2010a). The community of Eagle River is northeast and roughly 12 miles from the entrance off the Glenn Highway overpass (JBER, 2010a).

Land use on JBER-Richardson includes the following categories: airfield, community, residential, industrial, and ranges and training with total acreage estimated at 61,000 acres of which training areas and ranges account for about 92 percent of land use (JBER, 2010a). The acreage used for training and ranges includes a heliport, a drop zone suitable for airborne and air and land operations, firing ranges, and other infantry training areas with a majority of the area designated as maneuver training areas (60 percent) (JBER, 2010a). The cantonment area comprises approximately 9.4 percent of the total land area and includes military housing, schools, medical and dental facilities, youth services, a commissary and post exchange, libraries, a large physical fitness center, a theater, golf course, cross country skiing and running

trails, and a small ski hill (JBER, 2010a). Most facilities (e.g., administration buildings and barracks) are located in the center of the cantonment area whereas the residential areas are to the south and east (JBER, 2010a). Table 4.10-23 provides a summary of estimated acreage for JBER-Richardson. On JBER-Richardson, residential areas are located east of the intersection of Richardson Drive and Arctic Valley Road (PACAF, 2011). The neighborhoods on JBER-Richardson are Birch Hill, Kodiak, Moose Haven, Cottonwood, Independence, Fireweed, Raven Ridge, Puffin Park. Child development centers, child care centers, schools, and playgrounds are generally located within close proximity to the residential areas (PACAF, 2011). Most of these areas are in close proximity to the Glenn Highway, which is located to the south (PACAF, 2011).

Table 4.10-23. Acres of U.S. Army Garrison Alaska Land Use Planning Categories at Joint Base Elmendorf-Richardson

Facilities	Acres
Transportation	339
Housing	336
Community	187
Installation Support	40
Range and Training Land	54,416
Maintenance	2,019
Outdoor Recreation	901
Miscellaneous	2,828
Total	**61,376**

Source: USARAK, 2004.

Outgrants (right to use through a lease or use agreement) on JBER-Richardson represent 5.2 percent of the total acreage (JBER, 2010a). The State of Alaska Department of Military and Veteran Affairs as the largest single-agency user, holding 904 acres, which is used by the National Guard who maintains a helicopter fleet at Bryant Army Airfield that is used primarily for rescue missions in the mountains and tidal flats surrounding JBER (JBER, 2010a). The majority of the other outgrants are for space for equipment and access rights (e.g., easements and ROW) (JBER, 2010a).

In accordance with the Sikes Act, some parts of JBER-Richardson are accessible to the public for recreational use when not in use for military training. Most of the northern part of JBER-Richardson is open to recreational use, while the southern part of the installation is only open to non-motorized forms of recreation (JBER, 2010a). The public has access to the installation for camping, hunting, fishing, skiing, dog sledding; and in some areas there is access for off-road recreational vehicles as well as access to the Moose Run Golf Course and Otter Lake (JBER, 2010a). However, these uses are second to military training needs.

Construction within JBER also takes into account Air Installation Compatibility Use Zones (AICUZ). At the time of this PEA, AICUZ for JBER was not readily available, but a review of a past AICUZ map indicates that these areas are generally adjacent to airfields.

4.10.13.2 Environmental Consequences

No Action Alternative

If this alternative were chosen, no changes to land use conditions would occur. Continuing minor impacts to land use would be anticipated. Any noise generated is anticipated to remain within acceptable limits.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Minor impacts to land use would be anticipated to occur through implementation of Alternative 1 at JBER. A reduction in training land use would be anticipated that roughly correlates with the number of Soldiers inactivated or realigned as a result of this alternative in comparison to those remaining at JBER. The loss of approximately 4,300 Soldiers and Army civilians would decrease use of existing training land and training facilities. Alternative would involve the demolition of some facilities and construction of new facilities within the existing cantonment area. Minor land use impacts from construction and deconstruction at JBER are anticipated. No new range construction would occur as a result of this alternative. In addition, none of the current ranges would be expanded as described for the action alternatives. Therefore, no significant effects to land uses are anticipated.

Implementation of the JBER institutional programs, associated land management practices and coordination among Army, federal, state, and local land managers would continue. However, a reduction in live-fire and maneuver training may increase opportunities for recreational and hunting activities due to more training areas being opened.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be less than significant impacts from land use conflicts and compatibility anticipated as a result of this alternative. The gain of up to 1,000 Soldiers would require the additional use of training areas and qualification ranges. There may be short term and localized effects to land use compatibility from construction noise and activities that create dust. Construction projects would be located within areas of JBER-Richardson that are not currently used for recreational or hunting activities. Private properties bordering training areas/ranges may be indirectly affected by noise, dust, and the sight of equipment and human activities. However, these impacts would be localized and temporary, and are anticipated to be less than significant.

The additional live-fire training at JBER-Richardson ranges would conflict with recreational use of surrounding areas due to the increase in frequency that Soldiers would train on these ranges. As a result of the increased training, recreational activities such as hunting could be directly affected. The surrounding areas are uninhabited federal lands and no residential areas, schools, hospitals, or businesses are anticipated to be affected. The impacts from live-fire facilities would be localized to the vicinity around the ranges and are anticipated to be less than significant. Site-specific evaluation may identify in greater detail where the additional training would occur and may identify specific conflicts with public recreational use such as possible restrictions to some areas during hunting season.

The increase in maneuver training frequency may result in some restrictions on public access in some training areas. Impacts associated with public access closures are anticipated to be less than significant because alternate areas on JBER would still be available for recreational and hunting activities. Site-specific evaluation may identify in greater detail where the additional training would occur and may identify specific conflicts with public recreational use such as possible restrictions to some areas during hunting season.

Less than significant impacts are anticipated; further analysis would be required to quantify these impacts.

4.10.14 Hazardous Materials and Hazardous Waste

4.10.14.1 Affected Environment

The ROI for this VEC is JBER and the Municipality of Anchorage facilities that handle the storage and/or disposal of hazardous materials/waste, which could be affected by this Proposed Action.

Resource Conservation and Recovery Act Hazardous Waste. Hazardous materials and wastes include ammunition, UXO, POLs, lead, asbestos, PCBs, pesticides, radon, and contamination found at ERP sites (U.S. Army, 2008a). The JBER Oplan 19-3 (Environmental Management Plan) governs the use, generation, accumulation, storage, transport, and disposal of non-hazardous, hazardous, RCRA hazardous wastes and hazardous materials on JBER (JBER, 2011b).

JBER is regulated as a Large Quantity Generator of RCRA hazardous waste (generates more than 2,200 pounds of hazardous waste or more than 2 pounds of acutely hazardous waste per month) (JBER, 2010a). There are about 100 waste accumulation points within JBER and within the cantonment area (JBER, 2010a). JBER has received an EPA hazardous waste permit to operate a Central Storage Facility located at Building 11735 Vandenberg Avenue (JBER, 2010a). JBER's EPA identification number is AK8570028649 (JBER, 2010a). TSCA regulated wastes may also be generated on JBER such as PCBs (JBER, 2010a).

Compliance with OPlan 19-3 would ensure proper identification, management and disposal of hazardous waste and hazardous materials with a policy of minimizing the generation of waste. All persons on JBER (military, civilian, contractor, and tenants) must comply with Oplan 19-3 and the laws and regulations for which it seeks to ensure compliance (JBER, 2011b).

In relevant part, Subtitle C of RCRA regulates hazardous wastes and includes solid wastes if they are hazardous. Otherwise, solid wastes (non-hazardous) are regulated as solid waste, which is usually a function of local government waste-management. Solid wastes are hazardous if they exhibit one of the following characteristics: ignitability, corrosivity, reactivity, or toxicity), or are specifically listed as a hazardous waste by the EPA under 40 CFR Subpart M, Sections 266.200 and 266.202, or a hazardous waste under 40 CFR 261 Part 261 Subpart C or D (Garrett, 2004).

The use of ranges and training areas on JBER involves the use of military munitions (e.g., propellants, explosives, mortar rounds, artillery ammunition, small arms ammunition, grenades, and demolition charges). However, it is estimated that approximately 99.8 percent of munitions are consumed during combustion, resulting in minimal deposition on ranges/training lands if munitions operate properly (high order detonation) (U.S. Army, 2008a).

Military munitions may be classified as a hazardous waste under RCRA and; therefore, would be regulated under RCRA. The Military Munitions Rule excludes and exempts from the definition of solid waste, military munitions if exposed to certain uses. In general, a military munition is not a solid waste when: (1) unused military munitions are in the military stockpile and storage; (2) used of fired munitions; and (3) munitions being used for their intended purpose (JBER, 2010b).

An unused military munition is a solid waste when the munition is: (a) abandoned by being disposed of, burned, detonated (except during intended use), incinerated, or treated prior to disposal; or (b) the munition is removed from storage for the purpose of being disposed of, burned, or incinerated, or treated prior to disposal; or (c) the munition is deteriorated or

damages to the point where it cannot be put back into serviceable condition, and cannot reasonably be recycled or used for other purposes, or (d) the munition has been declared a solid waste by an authorized military official. Further, a used or fired military munition is a solid waste when (i) transported off range or from the site of use (not a range) for purposes of storage, reclamation, treatment, disposal, or treatment prior to disposal; or (ii) is recovered, collected, and then disposed of by burial, or landfilling either on or off a range, or (iii) if it lands off range and is not promptly rendered safe and/or retrieved (62 *Federal Register* 56492 (November 8, 1995).

Further guidance has also been established in DoD Directive 4715.11 Environmental and Explosives Safety Management on Operational Ranges within the U.S. (U.S. Army, 2008a).

Coordination with JBER Compliance program would ensure proper classification and handling of potential wastes generated at JBER.

Non-Resource and Recovery Act Hazardous Wastes, Biomedical Waste. The installation is registered with EPA as a Large Quantity Generator of hazardous waste due to the installation's many activities that support military operations and readiness. These wastes are stored properly in locations throughout the installation at satellite accumulation points, in accordance with JBER Oplan 19-3, and are centrally processed at the JBER Hazardous Waste Center located in Building 4314 on Kenney Avenue on JBER-Elmendorf for off-post disposal (JBER, 2010b). While previous years the installation generated a significant amount of hazardous waste (2001 for example saw a spike due to ERP restoration of PCB contaminated soil), the average for JBER-Richardson is less than 100,000 pounds per year (U.S. Army, 2008a). Very little biomedical waste is generated by the installation, and is stored in medical or dental facilities (U.S. Army, 2008a). The generation, transport, and disposal of waste is carried out in accordance with the JBER OPlan 19-3 (Environmental Management Plan).

Solid Waste Management. Municipal solid waste (e.g., residential) is collected on JBER-Richardson and hauled to the Municipality of Anchorage Landfill located adjacent to Eagle River, just north of JBER-Richardson along the Glenn Highway at Hiland Road (JBER, 2010a). The landfill capacity will allow for continued operation until 2043 (JBER, 2010a).

Demolition and construction waste from JBER is placed in special cells at the landfill (JBER, 2010a).

Unexploded Ordnance. The ERF Impact Area contains UXO and other potentially hazardous materials as it is an active military range, which is restricted to authorized personnel and where range clearance operations occur infrequently (e.g., as needed for access of authorized personnel/blow in place operations) (U.S. Army, 2008a). In addition to the ERF Impact Area, any range and training area within JBER has the potential to contain UXO even though not identified as a contaminated area on the ERP Atlas. For example, the southern portion of JBER-Richardson was historically used for training and may contain UXO.

Petroleum, Oils, Lubricants, and Storage Tanks. The installation has 22 ASTs ranging in capacity from 300 gallons to 50,000 gallons (U.S. Army, 2008a). These ASTs are located throughout the cantonment area; they generally contain fuels and fuel oil (U.S. Army, 2008a). The installation has a total fuel capacity that does not exceed 420,000 gallons; therefore, an Oil Discharge Prevention and Contingency Plan is not required; however, the installation does have a SPCC Plan for all storage areas (U.S. Army, 2008a). JBER-Richardson also has 42 USTs (U.S. Army, 2008a). Thirty-nine of these USTs are located on the main cantonment area (U.S. Army, 2008a). The other three are located at National Guard facilities located within JBER-Richardson's boundaries (U.S. Army, 2008a).

Petroleum-contaminated sites also exist within JBER and investigative and remediation efforts are carried out by the ERP program. The majority of these sites are within the cantonment area, although contamination of groundwater may lead to transport of such contamination.

Lead. On JBER-Richardson lead contaminated soil was found in housing areas developed prior to 1978 as a result of the exterior LBP (JBER, 2010a). Child play areas were also found to be contaminated with elevated levels of lead in the soil; these areas where subsequently capped to reduce lead exposure (JBER, 2010a). It is likely that LBP remains in older housing units (JBER, 2010a). Some/all of the buildings currently occupied by the 4/25 Airborne BCT may contain LBP. If managed in place, this does not present a serious risk.

Asbestos. Asbestos may be found in linoleum and floor tile, as part of adhesive, wallboard, pipe insulation, pipe-fitting insulation, and tarpaper (U.S. Army, 2008a). Activities (e.g., renovation and demolition) with the potential to encounter asbestos should be carried out in accordance with the JBER Asbestos Management and Operations Plan that is being developed. The majority of asbestos records for the JBER-Elmendorf were inadvertently destroyed and JBER is attempting to replace that documentation. Some/all of the buildings currently occupied by the 4/25 Airborne BCT may contain asbestos. If managed in place, this does not present a serious risk. However, demolition of such structures would have to comply with the Asbestos National Emissions Standards for Hazardous Air Pollutants (NESHAP). Coordination with JBER Compliance program would ensure proper classification and handling of potential wastes generated at JBER.

Pesticides and Herbicides. Pesticide and herbicide application is performed under contract by a private contractor (JBER, 2010a). Legally applied pesticides (chlordane) do not require remediation under CERCLA or RCRA and can be managed in place pursuant to 42 US 9607i (JBER, 2010a).

Radon. The EPA has designated Anchorage and the surrounding areas as Zone 2 for Radon – radon levels between 2 picocuries per liter (pCi/L) to 4 pCi/L (JBER, 2010a). In past surveys, radon has been detected above 4 pCi/L in housing areas. JBER-Richardson's radon records were inadvertently destroyed; however, many of the housing units were subsequently demolished (JBER, 2010a). All new facilities constructed at JBER-Richardson would undergo radon surveys (U.S. Army, 2008a).

ERP Sites. Soil and groundwater contamination has been identified at JBER, but is mostly confined to the cantonment areas with the exception of the ERF Impact Area (JBER, 2011c). Contamination includes PCBs, white phosphorus, petroleum products, and chlorinated solvents. Both former FRA and former Elmendorf Air Force Base have been listed on the National Priorities List under the CERCLA (EPA, 2012c).

In relevant part, the Federal Facility Agreement between the Army, EPA, and Alaska Department of Environmental Conservation divided former FRA into four OUs or cleanup sites: OU-A, OU-B, OU-C, and OU-D. RODs set forth investigation and/or remedial action objectives agreed to between the responsible parties and exist for OU-C (1998 ROD) and OU-A/ OU-B (1997 ROD). In relevant part, the ERF wetland area including OB/OD pads is OU-C. The ERF Impact Area (used for artillery and mortar training by the 4/25 Airborne BCT) was listed on the National Priorities List due to the presence of white phosphorus. A comprehensive remedial investigation was undertaken as part of the CERCLA process and white phosphorus was determined to be the only contaminant of concern at ERF (CH2M Hill, 1997). A comprehensive review of past investigations at the ERF Impact Area from 1980 to 1993 indicates that no net accumulation or contamination at the ERF Impact Area was shown from munitions constituents other than white phosphorus, although munitions residues were detected in low concentrations in either surface sediments, soils, or surface water including HMX, RDX, TNT, Tetrly, PETN,

2,4-DNT, 2,6-DNT, 2-Am-4,6-DNT, 4-Am-2,6-DNT, DNB, Nitrates, and Phosphates. It appears that the ERF wetland complex may act as a filter that prevents contaminant loading at the ERF Impact Area. Active remediation efforts at ERF are complete; however, long-term monitoring continues at the ERF Impact Area with the next 5-year review set to occur in 2018 to evaluate the continued success of the CERLCA remedy per the terms of the CERCLA ROD.

4.10.14.2 Environmental Consequences

No Action Alternative

Overall, less than significant effects are anticipated as a result of the No Action Alternative. There would be no change in JBER's management of hazardous materials, toxic substances, hazardous waste, or contaminated sites. JBER would continue to manage existing sources of hazardous waste in accordance with the HWMP.

***Cantonment Construction*.** Ongoing construction/maintenance activities have the potential to encounter hazardous waste and materials and other potential contaminants, although none of these activities would be anticipated to generate hazardous waste and materials. These activities would be conducted in accordance with the JBER Oplan 19-3, and other installation programs and plans, which are aimed at ensuring proper handling of any hazardous waste and material. Potential to encounter contaminated soils and/or groundwater is possible during subsurface work as the majority of contamination that exists on JBER is within the cantonment area. Coordination with JBER Restoration Program would ensure that contaminated sites are not disturbed, where such disturbance would trigger response and remedial action under RCRA or other laws and regulations.

Pesticides existing in soils at the JBER-Richardson may have adverse effects to nearby water bodies during construction due to stormwater runoff. Implementation of BMPs and mitigations to minimize runoff from construction sites would be required. Use of vehicles may generate POLs, which may enter the environment; however, implementation of BMPs would prevent significant impacts.

There is a potential to encounter LBP and asbestos during construction-related activities (e.g., demolition). Coordination with JBER Compliance Program would ensure compliance with the Asbestos NESHAP and proper disposal of construction debris.

Any new construction would involve the testing, recordation, and mitigation (if necessary) for radon. Solid waste would continue to be generated. Advance coordination with JBER environmental elements (Compliance and Restoration) would prevent inadvertent discoveries and/or improper handling of hazardous wastes and materials.

Range Maintenance. Ongoing maintenance activities have the potential to inadvertently encounter hazardous waste and materials, although none of these activities would be anticipated to generate such materials. Use of vehicles may generate POLs, which may enter the environment, but since maintenance occurs on an as needed basis, the potential for accidental spills of POLs is assumed to be low. Implementation of BMPs would prevent significant impacts.

A review of the 2011 ERP Atlas indicates that none of the identified ranges where the 4/25 Airborne BCT would train (excluding ERF Impact Area) are located within restoration sites. Maintenance work does not normally occur in the ERF Impact Area. Activities are not anticipated to trigger RCRA consistent with the Military Munitions Rule. Coordination with JBER Restoration Program would ensure that contaminated sites are not disturbed, where such disturbance would trigger response and remedial action under RCRA or other laws and regulations.

***Live-Fire Training*.** The number of Soldiers stationed and training at JBER-Richardson would remain the same and continued use of existing ranges and training areas (including the ERF Impact Area) would occur under current restrictions and using permissible weapon systems. No changes are anticipated in the amounts of ammunition that would be used, or in the generation of UXO and lead contamination on training ranges. Activities are not anticipated to trigger RCRA consistent with the Military Munitions Rule.

***Maneuver Training*.** The number of Soldiers stationed and training at JBER-Richardson would remain the same and; therefore, the intensity and frequency of maneuver training at JBER-Richardson would remain at current levels. Use of vehicles may generate POLs, which may enter the environment; however, implementation of BMPs would prevent significant impacts. Implementation of the USAG Alaska institutional programs, including its current BMPs, SPCC Plan, and SWPPP, would address the ongoing effects of maneuver training. Activities are not anticipated to trigger RCRA consistent with the Military Munitions Rule.

Less than significant impacts are anticipated, although the risks of generating and encountering hazardous or contaminated materials would continue at current levels. JBER programs are in place to prevent adverse impacts.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Less than significant impacts regarding hazardous waste generation are anticipated as a result of the implementation of Alternative 1. In the short term, there would be an increase in the demolition of outdated and no longer needed facilities. This would increase the volume of solid waste generated. In addition, an increase in asbestos and LBP disposal is anticipated until facility reduction is completed as a result of this alternative. Construction workers and Army personnel would take measures to dispose materials in accordance with regulatory requirements installation management plans. With the implementation of the JBER institutional programs, BMPs and SOPs, impacts are anticipated to be negligible or minor.

Training Infrastructure Construction. No new training infrastructure construction would occur as a result of Alternative 1. In addition, none of the current ranges would be expanded as described for the No Action Alternative. Therefore, a reduction in hazardous materials and hazardous wastes are anticipated.

Live-Fire Training. The number of required live-fire user days per year at JBER would drop below current levels and no new types of weapons are anticipated to be introduced to training areas. Therefore, a reduction in the amounts of ammunition that would be used or in the generation of UXO and lead contamination on training ranges is anticipated.

Maneuver Training. The intensity and frequency of maneuver training at JBER would drop below current levels. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at JBER. Therefore, a reduction in hazardous materials and hazardous wastes from maneuver training is anticipated.

Reduced long-term impacts are anticipated although the risks of generating and encountering hazardous or contaminated materials would continue below baseline conditions; however, JBER programs are in place to prevent adverse impacts. Further analysis would be required to quantify these impacts.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Less than significant impacts from hazardous materials and waste would be anticipated with an increased Soldier strength of up to 1,000 Soldiers and their Families. The storage, use, handling, and disposal of hazardous materials, toxic substances, and hazardous wastes would

not increase the risk to human health due to direct exposure, would not increase the risk of environmental contamination, and would not violate applicable federal, state, local, or DoD regulations. Existing management procedures, regulations, plans, and permits would be used to minimize risk.

Garrison Construction and Deconstruction. Construction and demolition of structures within the cantonment area would generate hazardous waste due to the presence of asbestos and lead in some of the older existing structures. The installation would ensure that any removal and disposal of these materials would be in accordance with established federal, Army, and USAG Alaska policy for handling hazardous materials and hazardous wastes. New construction would involve the testing, recordation, and mitigation (if necessary) for radon.

The increase in Soldiers from all of these stationing alternatives would result in the generation of biomedical wastes from dental and medical facilities on post. These wastes would be processed in accordance with current SOPs and regulations. Because the installation is already considered a Large Quantity Generator no additional permitting or significant actions are likely to be required.

Training Infrastructure Construction. Short-term effects are anticipated from the upgrade of existing ranges and the construction of new ranges to accommodate growth. These ranges have been previously used and could contain lead and other materials from spent ammunition. Potentially contaminated soils that would need to be removed from ranges would be treated at an off-post facility. Additionally, construction equipment and worker vehicles operating in the range areas could cause spills of hazardous materials (POL) during the construction phase. However, in accordance with USAG Alaska policy, all spills are to be cleaned up immediately and proper reporting requirements followed.

Live-Fire Training. Alternative 2 would increase the frequency of Soldier live-fire training, thus increasing the amount of lead bullets and other munitions expended in the range area. Live-fire small arms ranges would retain their berms to stop projectiles fired at the ranges. Although a great deal more lead would be fired into impact berms, the installation has mitigation measures in place to ensure berms are well maintained and re-graded as needed to prevent erosion.

No new weapon types would be introduced to JBER training areas. Handling and storage methods, disposal protocols, and safety procedures would continue to be conducted in accordance with existing regulations.

Maneuver Training. Transportation of personnel and use of flammable or combustible materials, such as fuel or ordnance (i.e., weaponry or equipment), could increase the potential for spills or releases of hazardous materials to the environment. BMPs would continue to be exercised throughout the garrison. JBER's existing programs, management plans, and regulations that govern handling, use, storage, and disposal of hazardous and non-hazardous materials would remain in place. All spills should be cleaned immediately in accordance with USAG Alaska Pamphlet 200-1.

Less than significant impacts are anticipated, although the risks of generating and encountering hazardous or contaminated materials would increase slightly above current levels. JBER programs are in place to prevent adverse impacts.

4.10.15 Traffic and Transportation

4.10.15.1 Affected Environment

The ROI for this VEC is JBER and Municipality of Anchorage transportation infrastructure that could be affected by the Proposed Action.

JBER-Richardson is accessible via air, road, rail, and sea and uses all four modes of transportation to support training and logistics requirements. The Anchorage International Airport is the nearest commercial airport and is located about 15 miles southwest of JBER with other civilian airports. JBER includes the JBER-Elmendorf Airfield and Bryant Army Airfield on JBER-Richardson (JBER, 2010a).

Anchorage has two primary highways, the Glenn Highway, and Seward Highway. Glenn Highway offers access from JBER-Richardson to the northeast/Fairbanks, and also to the Parks Highway, where it continues to Glenn Allen and ultimately connects to Richardson Highway offering a second means of access to Fairbanks. It connects to the ALCAN Highway that offers road access through Canada to the lower 48 (U.S. Army, 2008a). The Seward Highway offers access to the southern Alaskan ports of Whittier, Seward, and Homer (U.S. Army, 2008a).

The installation has five entrances. Three entrances are accessible from the Glenn Highway (at FRA and Arctic Valley Road (connecting to D Street/"Main Gate"), Muldoon, and Boniface), one in the industrial area of Anchorage (Post Road) and one from downtown Anchorage (Government Hill) (Gordon, 2012). There is also the Artillery Road gate (which is primarily an emergency and alternate entrance to JBER-Richardson north of Eagle River) (Gordon, 2012) The areas east of the Glenn Highway are not fully controlled by a manned gate (FRA and Arctic Valley Road and the Arctic Valley Road entrance-only exit off the Glenn Highway with access to the Moose Run Golf Course) (Gordon, 2012).

Major roads servicing JBER-Richardson include the Glenn Highway, Arctic Valley Road, Bear Run Lane Frontage Road, and D Street (JBER, 2010a). Richardson Dive turns into Davis Highway to the west as it connects to JBER-Elmendorf (PACAF, 2012).

On JBER, the main east-west arteries are Richardson Drive and D Street (Gordon, 2012). The secondary east-west corridors are the Davis Highway and Arctic Valley Road (Gordon, 2012). The main north and south arteries are 5th and 6th Streets, with secondary corridors being 1st Street (Gordon, 2012). The main artery to the North JBER-Richardson training areas is Otter Lake Road/Route Bravo (Gordon, 2012).

At the time of this PEA, LOS data was not readily accessible; however, information does exist as to the potential issues associated with traffic and congestion on JBER and in the immediate vicinity.

The installation periodically experiences traffic flow issues at the main gate on JBER-Richardson due to the morning and especially evening commute. Findings from a 2008 study have forecasted traffic conditions for the next 10 years at JBER-Richardson. Congestion during peak hours was noted at the Glenn Highway and D Street Interchange with the following traffic recommendations:

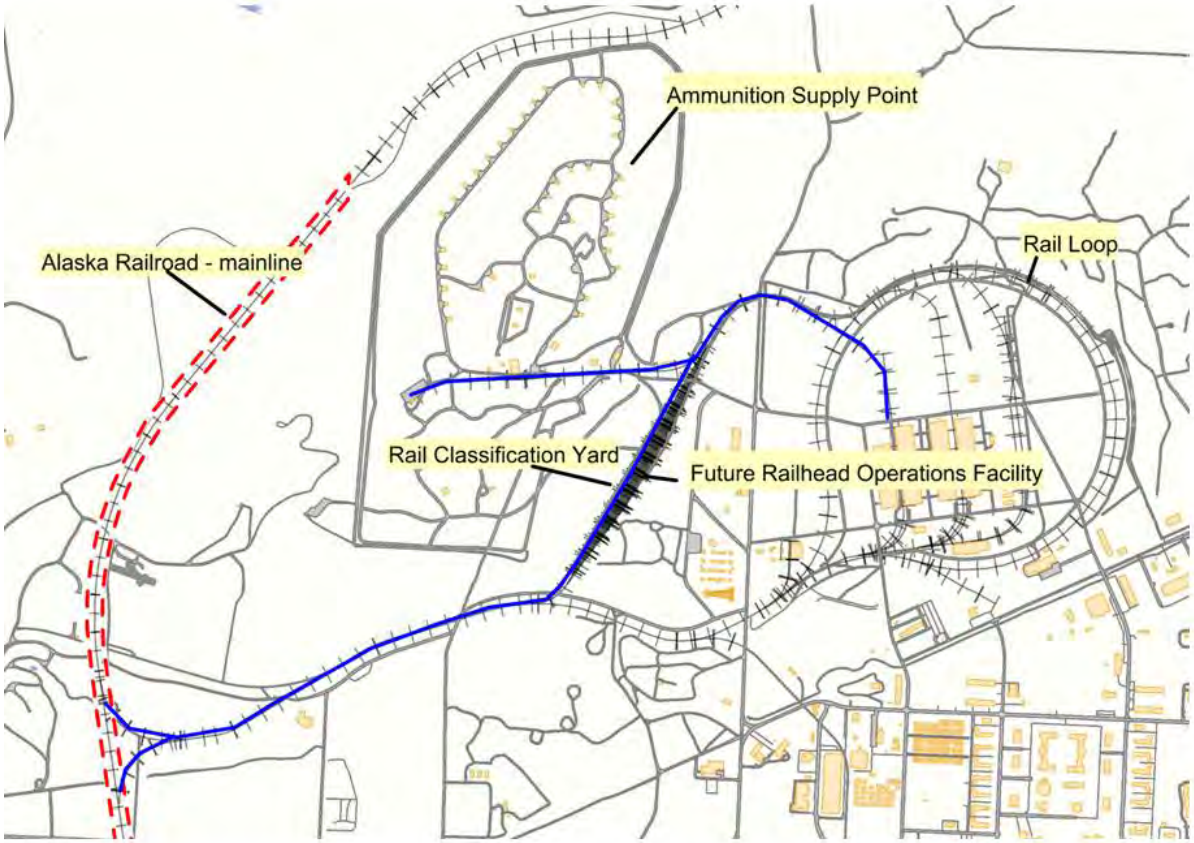
- Lengthening the north and southbound ramps to the Glenn Highway;
- Expanding the northbound on-ramp of the Glenn Highway to two lanes;
- Placement of signals at the northramps/Fort Access Road at the Glenn Highway interchange; and
- Placement of signals at 5th Street/Richardson Drive on JBER-Richardson.

In addition to the main gate at JBER-Richardson, the intersection of Vandenberg Avenue and the Richardson Highway and Davis Avenue experience traffic congestion (Rasmussen, 2012). JBER-Richardson is currently considering commissioning a traffic study to evaluate alternatives and mitigations, but is waiting funding (Dougan, 2011).

The Alaska Railroad travels through the installation and the cantonment area and offers access to FWA and central Alaska, and Seward and Whittier ports (U.S. Army, 2008a). JBER

Richardson has a rail classification yard (holding yard), located in an area to the east of the main Alaska Railroad rail line on JBER-Richardson, and is currently constructing a Railhead Operations facility adjacent to it (U.S Army, 2008a). The Alaska Railroad owns the main line running from the Port of Anchorage to FWA and central Alaska; however, JBER owns the rail lines that run to the rail classification yard from the main line. Under agreement, JBER currently allows the Alaska Railroad use of the rail classification yard for storage.

Location of the rail facilities are provided in Figure 4.10-7. The rail outlined in blue indicates rail lines that are presently existing/in use and owned by JBER; the rest of the rail lines, e.g., within the Rail Loop are demolished/no longer in use. The location of the extension that was the subject of past discussions would extend north from the Rail Classification Yard, past the ASP, until it reaches the Alaska Railroad main line to the north. The current Railhead Operations facility project seeks to increase railcar handling capacity and; therefore, improving the efficiency of future deployments.



Source: PACAF, 2012.

Figure 4.10-7. Joint Base Elmendorf-Richardson Rail Facilities

JBER rail shipments can be primarily summed up into heavy vehicle and rolling equipment movements and occasional ammunition shipments (Gordon, 2012). Railways allow for mobilization of tactical vehicles in addition to being a staging point for FWA rail movements (Gordon, 2012). Additionally, the Port of Anchorage is used by the military to ships a variety of types of cargo. The Port is accessible directly from JBER or by road via the Glenn Highway to downtown Anchorage (JBER, 2010a). When the Port of Anchorage is closed due to ice,

supplies may be shipped through the Ports of Seward and Whittier which are ice-free year-round and accessible by road and rail (JBER, 2010a).

4.10.15.2 Environmental Consequences

No Action Alternative

Less than significant impacts are anticipated under the No Action Alternative. Surveys and studies conducted on the existing transportation system determined that it is sufficient to support the current traffic load. However, continued traffic patterns and congestion within and at major traffic control points leading into and away from the base would persist at current levels. Noticeable traffic exists at the main gate at JBER-Richardson during rush hours and can impact traffic on major highways during peak rush hour.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Beneficial long-term effects would be anticipated from the decrease in military fleet vehicles and private vehicles, likely alleviating the traffic flow issues at the Main Gate entrance to the installation. Under Alternative 1, the Soldier and civilian population of JBER would decrease and the reduced traffic would no longer compete with seasonal (summertime and spring) traffic conditions associated with tourism. A reduction in military use of range roads or trails within JBER training areas would occur. In addition, impacts to local highways associated with military convoys would also be considerably reduced. Potential conflicts between civilian use and military use of local roadways would be reduced proportionately with the reduction in overall military population at JBER.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be less than significant, short and long-term impacts on traffic and transportation systems.

***Cantonment Construction*.** Alternative 2 would generate additional traffic from construction equipment and workers. Traffic impacts would be short term, and would be experienced at the main gate to the cantonment area and on JBER's primary and secondary streets. While traffic flow may have minimal impacts to Glenn Highway, there could be back-ups at the main gate entering the installation, driving the possible redistribution of traffic to the secondary gate entering the installation from Elmendorf Air Force Base, or altering flow at the main gate.

Long-term effects would be anticipated to general traffic conditions in the cantonment area. There would be an anticipated shortfall of organizational and motor pool parking associated with this level of Soldier strength. The action would increase the amount of Soldiers, their Families, and any support personnel (including military fleet vehicles and POVs) operating within the cantonment area. The installation may consider construction of additional motor pool and parking facilities to accommodate this level of growth. The increase in base population would likely put more demand on the intersection of Vandenberg and Richardson Highway.

***Range Maintenance*.** No new range roads or trails would be considered for construction outside existing training areas. A majority of military traffic would be designated on military roads and trails; therefore, military traffic would not interfere with civilian traffic.

***Maneuver Training*.** No new range roads or trails would be considered for construction outside existing training areas. A majority of military traffic would be designated on military roads and trails; therefore, military traffic would not interfere with civilian traffic. Company level training and above would occur at DTA. Effects to traffic on the Glenn, Parks, and Richardson Highways are likely to be short term because in order to meet training requirements these units

would travel to DTA only a few times per year. The garrison enforces a convoy procedure permitting groups of vehicles (or serials) to travel in no more than 20 vehicles per serial, and maintaining a gap of approximately 20 minutes between serials. Following this procedure reduces the impact to traffic on these major highways.

Significant impacts are not anticipated to traffic and transportation from increased Soldiers and dependents, although traffic would continue to be an issue at the main gate during rush hour. Less than significant impacts would be anticipated. Further analysis would be necessary to quantify these impacts.

4.10.16 Cumulative Effects

Region of Influence

The ROI for this cumulative impact assessment of Army 2020 realignment at JBER encompasses the Municipality of Anchorage in the State of Alaska to the extent of potential direct and indirect impacts noted in prior sections, unless otherwise stated in the analysis below. The Municipality of Anchorage is Alaska's largest and most populated city. JBER is a key component of the economy within the ROI. JBER has been supporting the Army since 2010; however, the Army has been present at former FRA since the 1940s.

For the purpose of this analysis, cumulative effects analysis considers reasonable foreseeable Army, DoD, and other federal agency actions that are funded and in the planning process for moving forward. This analysis also includes past or present projects not already included for consideration as part of the direct and indirect impacts analysis in the previous sections. Reasonably foreseeable projects are considered those projects which are funded or zoned, and therefore there is a high likelihood of project completion.

There are numerous planned or proposed actions within the ROI that have the potential to cumulatively add impacts to Army Force 2020 alternatives. These actions are either in progress or reasonably could be initiated within the next 5 years. A list of projects below presents some of the projects which may add to the cumulative impacts of the implementation of Army 2020 realignment alternatives.

Joint Base Elemendorf-Richardson Projects (DoD and non-DoD) Actions (Past, Present, and Reasonable Foreseeable):

- *Transformation EIS* (Past);
- Grow the Army EA (Past);
- *Range Upgrade and Expansion EA (Past);*
- *F-22 Plus Up EA* (Past/Present);
- *Demolition Training EA* (Past/Present/Future);
- *Resumption of Year-Round Firing EIS* (Future);
- Proposed Relocation of F-16 (Future);
- Proposed Runway Extension at Runway 16-34 (north-south) (Future);
- Otter Lake and Sixmile Conservation Projects (Future); and
- Land Swap (Future).

Other Agency (DoD and non-DoD) Actions (Past, Present, and Reasonable Foreseeable):

- North End Runway Material Extraction and Transport EA (Past);
- Port of Anchorage Intermodal Expansion Project (Past/Present/Future);
- Fire Island Wind Project (Present/Future);

- Knik Arm Bridge and Toll Authority (KABATA) (Future); and
- Joint Pacific Alaska Range Complex (JPARC) EIS (Future).

No Action Alternative

Beneficial through significant but mitigable adverse cumulative impacts would be anticipated from implementing the No Action Alternative. Under the No Action Alternative, no changes in military authorizations, or local environmental conditions would be anticipated. Installation facility shortages and excesses would remain at their currently planned levels without additional stationing or force reductions. The Army would continue to implement some facilities reductions of outdated/unused facilities. Under the No Action Alternative, cumulative impacts to the following VECs would be beneficial to minor only and are not carried forward for detailed discussion in this section. These VECs are: airspace, noise, water resources, facilities, energy demand and generation, and land-use conflict and compatibility. Cumulative impacts under the No Action Alternative that would be more than minor are: air quality, cultural resources, soil erosion, biological resources, wetlands, hazardous material and hazardous waste, and traffic and transportation. Potential cumulative impacts are discussed below.

***Air Quality*.** The ROI for this cumulative impacts analysis is the same as Section 4.10.2 above. There exists the potential for cumulative impacts to air quality in the form of mobile emissions, stationary emissions, fugitive dust, training-related fires, and prescribed burns from projects within JBER and in the surrounding areas. On a regional level, this Proposed Action would tend to contribute to cumulative air quality impacts, but the data suggests that this action would be unlikely to lead to a violation of NAAQS or cause surrounding communities to violate the NAAQS.

The No Action Alternative would have the potential to result in the generation of CAPs that would be dispersed into the surrounding environment, both within and outside of JBER; however it is likely that such impacts would remain with baseline conditions explained in Section 4.10.2.

***Cultural Resources*.** The ROI for this cumulative impacts analysis is the same as Section 4.10.4 above. There exists the potential for cumulative impacts to cultural resources in the form of disturbance or destruction of known and/or unknown cultural resources. On a regional level, this Proposed Action would tend to contribute to cumulative cultural resource impacts to the same extent as other projects that are carried out in areas where cultural resources may exist. The risk of losing unknown cultural resources seems to exist with any project being carried out in areas that have not been surveyed and where inadvertent discoveries of cultural resources could occur based on history of the area even if best efforts to avoid such impacts are implemented.

Under the No Action Alternative, it is possible to inadvertently encounter unknown cultural resources. However, this Proposed Action is within the scope of past actions that have occurred in both developed and undeveloped areas. For example, no significant individual or cumulative effects were anticipated in the *Range Upgrade and Expansion EA*, which analyzed actions that occurred in relatively undeveloped parts of the base where the potential for existence of cultural resource tends to be greater as compared to the cantonment area (USARAK, 2002). Future actions listed above, along with this Proposed Action, seem to hold the possibility of the inadvertent disturbance or destruction of cultural resources based on the cultural history of the Cook Inlet area. Although inadvertent discoveries are possible in this Proposed Action, it is not anticipated that loss of known or unknown cultural resources would occur in conjunction with the implementation of JBER's cultural resource management measures. Since the Proposed Action involves continued use of existing ranges and training areas and assumes proper procedures would be followed, e.g., consultations and surveys, it is

unlikely that the Proposed Action would not tend to result in significant cumulative impacts. Therefore, although the potential exists for inadvertent discovery of unknown cultural resources under this alternative, the Proposed Action is not anticipated to result in significant cumulative impacts. Cumulative impacts would be projected to be significant but mitigable.

***Soil Erosion*.** The ROI for this cumulative impacts analysis is the same as Section 4.10.6 above. There exists the potential for cumulative impacts in the form of soil compaction, soil erosion, soil contamination, and/or loss of soil productivity. Impacts to soil are also interrelated to impacts to vegetation and/or water resources. On a regional level, impacts to soil resources alone on JBER would not likely represent a significant cumulative impact as the soil resources on JBER are not of special importance as compared to soil in areas designated to support farmland. On the other hand, impact to soil resources may result in indirect impacts to vegetation and/or water resources, which may tend to indirectly impact other sensitive resources, e.g., wetlands and the critical habitat of the beluga whale adjacent to JBER.

Under the No Action Alternative, impacts to soil would continue and largely be contained within the boundaries of areas that already experience use. However, there still remains the possibility that impacts would occur despite best efforts of the existing ITAM program. There exists a potential to contribute to cumulative impacts to soil quality and stability under the No Action Alternative.

Biological Resources. The ROI for this cumulative impacts analysis is the same as Section 4.10.7 above. There exists the potential for cumulative impacts to biological resources in the form of noise, soil resource impacts, vegetation impacts, and water resource impacts. Cumulative impacts are also likely to result because they all have the potential to affect the health of the ecosystem upon which specific species may depend. On a regional level, impacts to biological resources on JBER would not likely represent a significant cumulative impact to biological resources because adherence to natural resource programs and plans, BMPs, and management measures for other resource areas (e.g., soil resources) would tend to mitigate against potentially significant impacts. However, it is possible that continued and future impacts to various VECs could contribute to cumulative impacts to the beluga whale. Despite the continued issuance of no-Jeopardy Biological Opinions to projects in the Cook Inlet area it is possible that the continued decline in the population of the species is a result of cumulative impacts of at least all past and present actions within Cook Inlet. It is possible that future actions may eventually present a significant cumulative impact to the species.

There exists a potential to contribute to cumulative impacts to biological resources because training does occur in habitat areas on JBER and other indirect impacts may also affect the health of the ecosystem (e.g., runoff from cantonment area construction) as a result of implementation of all alternatives. For example, continued development in developed and undeveloped areas may encroach on wildlife corridors and habitat. However, JBER is bound by Chugach State Park to the south and southeast, which may act as a refuge to displaced terrestrial species. However, it is not anticipated that this Proposed Action would not likely result in impacts that would result in any significant impact to biological resources, e.g., declines of any population of a threatened and endangered species; fisheries; terrestrial mammals; and/or waterfowl and eagles. On the other hand, management of natural resources on JBER may result in loss of individuals of a species in the case of depredation permits along the flight line to avoid BASH-related accidents. But since this Proposed Action is within the scope of past-larger actions, it is unlikely that this Proposed Action would result in significant cumulative impacts with the implementation and enforcement of BMPs to avoid impacts (e.g., SWPPP). One caveat to this discussion is potential impacts to the beluga. Since it is not known what is the cause of their population decline, it is possible that impacts to the beluga directly (e.g.,

noise) and/or indirectly (e.g., biological resources, soil resources, wetlands, and water resources) may be, in part, a reason for their decline.

Future actions listed above that may affect the beluga whale are the *Draft EIS for Resumption of Year-Round Firing*, the Ports of Anchorage projects, the relocation of F-16 from Eielson to JBER, and the Fire Island Wind Project. These projects involve work within and/or impacts to the marine environment that have the potential to affect the beluga and/or its critical habitat. A review of the Port of Anchorage Biological Opinion indicates that no jeopardy to the beluga is anticipated. The continued issuance of Biological Opinions indicates that cumulative effects are not yet at a level where development should be halted to preserve the continued existence of the species. However, current information suggests a continued downward trend in the beluga population. Given the continuing decline of the beluga population, it is possible that future projects may result in significant impacts even if the anticipated impacts are within the scope of past actions for which a no Jeopardy Opinion was issued. JBER carries out restoration activities to repair and/or prevent damages to biological resources. For example, future projects at Otter Lake and Sixmile Creek/Lake are intended to increase salmon populations in these waterways, primarily for the benefit of the beluga whale as salmon are a PCE of the belugas' critical habitat. Resource management actions at JBER should continue to emphasize sensitive areas such as the Ship Creek Riparian Area, ERF Impact Area and associated tidal wetlands, Alpine tundra in the adjacent Chugach Mountains, and old growth forest to ensure the continued survival of any species relying on such habitats as biodiversity seems to be an indication of general ecosystem health. Therefore, although the potential exists for cumulative impacts to biological resources, the Proposed Action is not anticipated to result in significant cumulative impacts. However, consultation under this NEPA effort should occur to ensure that this Proposed Action would not jeopardize the continued existence of threatened and endangered species and/or its critical habitat.

Wetlands. The ROI for this cumulative impacts analysis is the same as Section 4.10.8 above. There exists the potential for cumulative impacts to wetlands in the form of training at the ERF Impact Area (largely a wetland), loss of wetlands due to construction in areas where wetlands are present, site runoff from construction into surrounding environment that may contain wetlands (indirect impacts), and impacts from the use of existing ranges and training areas adjacent to wetlands (indirect impacts). On a regional level, cumulative impacts to wetlands may occur if wetlands are lost; however, the U.S. Air Force is required to prepare an environmental assessment to evaluate cases in which wetlands may be lost. But, in general, JBER aims to avoid impacts to wetlands by siting projects outside of areas where wetlands may be present. In addition, the rate of new construction may decline in the near future with decreases in federal spending and corresponding decreased need for new construction, which would further reduce the potential for impacts to wetlands. Some potential impacts, however, are unavoidable (e.g., using the ERF Impact Area, which is largely a wetland).

As to continued use of the ERF Impact Area, there is no data available to indicate that training at the ERF Impact Area has actually resulted in loss of wetlands and/or loss in function as the ERF Impact Area experiences high tidal flows that are believed to repair damage from mortar and artillery impacts to the wetland. The ERF Impact Area has been used as an impact area since the 1940s and despite the contamination of white phosphorus that occurred in the 1980s, the ERF Impact Area continues to be viable habitat for migratory birds and beluga whales. Additionally, the success of the CERCLA cleanup process at the ERF Impact Area shows that waterfowl mortality is below the levels set forth in the CERCLA ROD's remedial action objectives. Despite the impacts from white phosphorus, the past CERCLA investigations indicate that other potential contaminants in the ERF Impact Area are not accumulating and; therefore, do not present a risk to human health and/or the environment.

Future actions listed indicate that the proposed extension of the JBER-Elmendorf North-South Runway has the potential to affect wetlands similar to the North End Runway Material Extraction and Transport Environmental Assessment that resulted in a FNSI/Finding of No Practicable Alternative.

Therefore, although the potential exists for cumulative impacts to biological resources, the Proposed Action is not anticipated to result in significant cumulative impacts.

Hazardous Material and Hazardous Waste. The ROI for this cumulative impacts analysis is the same as Section 4.10.14 above. There exists the potential for cumulative impacts as a result of hazardous material and/or waste generation.

Pollution prevention efforts at JBER are aimed at minimizing the generation of hazardous material and waste. Despite these efforts, waste streams would continue to exist on JBER, generally speaking, and would require access to facilities for proper storage, transport, treatment and/or disposal. In the event of its generation, these hazardous materials and wastes would be handled in accordance with the law. This Proposed Action and/or future actions listed above do not appears to present a possibility of generating large amounts of materials and waste and/or affecting known contaminated sites in violation of the law. Continued use of use available landfills both within and outside of Alaska for proper treatment and/or disposal would likely occur. The landfill used by JBER and non-federal entities appears to have capacity that would not be an issue until 2043. The continued use of the ERF Impact Area does not present a concern at this time since white phosphorus is banned and also since the JBER ERP continues to meet its remedial action objectives under the CERCLA ROD.

There is always some degree of risk that contaminants may inadvertently enter the environment and/or activities may result in the inadvertent discovery or generation of such materials/waste. However, following proper protocol and coordination with appropriate JBER offices would eliminate concerns over the improper handling, storage, generation, transport, and/or disposal of hazardous materials and waste.

Therefore, although the potential exists for cumulative impacts to hazardous material and/or waste, the Proposed Action is not anticipated to result in significant cumulative impacts.

Traffic and Transportation. The ROI for this cumulative impacts analysis is the same as Section 4.10.15 above. There exists the potential for cumulative impacts to traffic and transportation within JBER and along the Glenn Highway that connects the Municipality of Anchorage with the outlying areas where commuters live.

The No Action would not likely lead to overcapacity of transportation routes within and/or outside of JBER, as certain roads are normally congested during rush hour. Congestion is not solely a function of JBER activities, but more due to the fact that there is only one main Highway connecting the Municipality of Anchorage with the outlying areas. Future actions listed above would reduce impacts to traffic (e.g., Knik Arm bridge), and would partially offset current congestion issues.

Therefore, although the potential exists for cumulative impacts to traffic and transportation the Proposed Action is not anticipated to result in significant cumulative impacts.

Alternative 1: Force Reduction (up to 4,300 Soldiers and Army Civilians)

Cumulative impacts as a result of the implementation of Alternative 1 range from beneficial impacts to significant impacts which are anticipated for socioeconomics. Under Alternative 1, cumulative impacts to the following VECs would be beneficial or minor only and are not carried forward for detailed discussion in this section. These VECs are: air quality, airspace, noise, soil erosion, wetlands, water resources, facilities, energy demand and generation, land-use conflict

and compatibility, and traffic and transportation. Cumulative impacts under Alternative 1 that would be projected to have more than minor adverse impacts are: cultural resources, biological resources, socioeconomics, and hazardous material and hazardous waste. Potential cumulative impacts are discussed below.

***Cultural Resources*.** Cumulative impacts to cultural resources under Alternative 1 would be significant but mitigable for the same reasons as the No Action cumulative effects.

Biological Resources. Alternative 1 is anticipated to result in less than significant cumulative impacts to biological resources. Alternative 1 would result in similar cumulative impacts to those discussed as a result of the No Action Alternative cumulative effects analysis, however, impacts would occur at reduced levels attributable to less Army training and construction.

Socioeconomics. The ROI for this cumulative impacts analysis is the same as Section 4.10.11 above. Significant impacts to socioeconomics (employment and population) are anticipated with the implementation of this alternative. On a regional level, these impacts would be felt by those that rely directly and indirectly on federal spending. This would be compounded by any losses or reductions in service member numbers by the U.S. Air Force, Coast Guard, Navy or Marine Corps within the ROI. Future cuts in federal spending may cause further economic impacts in Alaska. The current trend of decreased federal spending would may contribute to cumulative socioeconomic impacts in Alaska and reduced state tax income. The implementation of Alternative 1 is likely to result in significant cumulative impacts to socioeconomics.

No environmental justice impacts are anticipated as a result of this Proposed Action in regards to socioeconomics and/or other effects, e.g., noise impacts, under Alternative 1.

Hazardous Material and Hazardous Waste. Less than significant cumulative impacts are anticipated for the same reasons discussed under the No Action Alternative cumulative effects discussion.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Cumulative impacts as a result of the implementation of Alternative 1 range from beneficial impacts to significant but mitigable. Under Alternative 2, cumulative impacts to the following VECs would be beneficial to minor only and are not carried forward for detailed discussion in this section. These VECs are: airspace, socioeconomics, and energy demand and generation. Cumulative impacts under the Alternative 2 that would result in more than minor adverse impacts are: air quality, cultural resources, noise, soil erosion, biological resources, wetlands, water resources, facilities, hazardous material and hazardous waste, land-use conflict and compatibility, and traffic and transportation. Potential cumulative impacts are discussed below.

***Air Quality*.** The ROI for this cumulative impacts analysis is the same as Section 4.10.2 above. There exists the potential for cumulative impacts to air quality in the form of mobile emissions, stationary emissions, fugitive dust, training-related fires, and prescribed burns from projects within JBER and in the surrounding areas. On a regional level, this Proposed Action would tend to contribute to cumulative air quality impacts, but the data suggests that this action would be unlikely to lead to a violation of NAAQS or cause surrounding communities to violate the NAAQS.

Alternative 2 would have the potential to result in the generation of CAPs that would be dispersed into the surrounding environment,both within and outside of JBER. However, as compared to the other alternatives, Alternative 2 would likely have the potential to increase impacts to air quality to above baseline conditions. For example, Alternative 1 would likely

result in air quality impacts at a reduced level (compared to baseline explained in Section 4.10.2), which may act as an offset for other actions resulting in air quality impacts.

As to Alternative 2, a review of past military NEPA documents affecting JBER indicate that this Proposed Action would not exceed the potential impacts anticipated in projects of larger scope that have occurred at JBER. For example, the Grow the Army EA did not find significant individual or cumulative impacts to air quality as a result of a 1,773 increase of Soldiers at JBER-Richardson. It is unlikely that this Proposed Action would result in significant cumulative impacts where these past larger actions have not resulted in noticeable impacts to air quality as indicated by the current information presented in Section 4.10.2.1. Section 4.10.2.1 sets forth the affected environment, which can be viewed as the result of all past actions. Future actions listed above, along with this Proposed Action, seem likely to result in air quality impacts would occur during new construction associated with the Port of Anchorage, for example, and also as a result of potential increases in aircraft use at JBER. However, construction would result in temporary impacts and F22 analysis indicates that recent relocation of aircraft to JBER does not have the potential for significant impacts to air quality.

Therefore, although the potential exists for cumulative impacts to air quality, this Proposed Action is not anticipated to result in significant adverse cumulative impacts. However, the emerging data and knowledge about GHG emissions and climate change may result in the need for further analysis of potential air quality impacts.

***Cultural Resources*.** Cumulative cultural resource impacts would be significant but mitigable for the same reasons discussed as part of the No Action Alternative.

Noise. The ROI for this cumulative impacts analysis is the same as Section 4.10.5 above. There exists the potential for cumulative impacts in the form of noise generation and impacts on the surrounding environment and communities. On a regional level, noise impacts would be consistent with the continued operation of JBER and no new areas within JBER or the communities along its border would experience increased intensity of noise per training events, although increase frequency may occur. However, noise has the potential to impact the endangered Cook Inlet beluga whale and consultation for the Proposed Action may be required for noise impacts pursuant to the ESA and MMPA.

Under Alternative 2, the duration of noise events may be prolonged, but the intensity is anticipated to remain within baseline conditions. As to community impacts, the recent F22 Plus-Up EA indicates that noise impacts are within acceptable limits to human hearing. The F22 Plus-Up did not indicate environmental justice impacts as a result of increased noise. Thus future projects increasing noise impacts to adjacent communities would likely remain within acceptable levels and not affecting low income and/or minority communities disproportionally.

But, there exists a potential to contribute to cumulative impacts as to the impact of noise on the beluga whale. Many of the past and future projects noted above have the potential to generate noise and/or involve work in the waters of the Cook Inlet, the location of critical habitat for the beluga. For example, the *Draft EIS for the Resumption of Year-Round Firing Opportunities* (RYFO) in addition to the civilian projects in the Cook Inlet (Port of Anchorage Intermodal Expansion) indicates potential impacts to the beluga whale. A review of the NMFS's Biological Opinion for the Port of Anchorage expansion indicates that the project would not jeopardize the continued existence of the beluga, although the action would result in take by harassment. The same is true for the Draft EIS for RYFO. However, new information published by NMFS indicates that the population of the beluga continues to decline from 340 animals in 2010 to 284 animals in 2011. This may be attributable to the cumulative impacts various actions in the region are having on the species. Nevertheless, consultation under the ESA and MMPA would ensure that this Proposed Action would not likely jeopardize the continued existence of any

endangered or threatened species and/or its critical habitat. In addition, JBER is currently evaluating baseline noise-producing operations (e.g., demolition training) adjacent to the ERF Impact Area in addition to proposing conservation projects aimed at benefiting the beluga whale (e.g., Otter Lake and Sixmile Conservation projects aimed at salmon habitat enhancement).

Therefore, although the potential exists for cumulative impacts from noise, this Proposed Action is not anticipated to result in significant adverse cumulative impacts. However, this determination would be subject to future consultation findings under the ESA and MMPA if Alternative 2 were selected.

***Soil Erosion*.** The ROI for this cumulative impacts analysis is the same as Section 4.10.6 above. There exists the potential for cumulative impacts in the form of soil compaction, soil erosion, soil contamination, and/or loss of soil productivity. Impacts to soil are also interrelated to impacts to vegetation and/or water resources. On a regional level, impacts to soil resources alone on JBER would not likely represent a significant cumulative impact as the soil resources on JBER are not of special importance as compared to soil in areas designated to support farmland. On the other hand, impact to soil resources may result in indirect impacts to vegetation and/or water resources, which may tend to indirectly impact other sensitive resources, e.g., wetlands and the critical habitat of the beluga whale adjacent to JBER.

Under Alternative 2, impacts to soil would continue and largely be contained within the boundaries of areas that already experience use under the No Action. However, increased training as a result of the implementation of Alternative 2 may result in increased impairment to soil resources, which would require more focused attention from the ITAM program that exists to conserving and managing soil resources impaired by training and annual RTLA reports provide the needed information from which to assess and address soil impacts.

However, past and future projects indicate that this Proposed Action is within the scope of past analyses and that future action's appears to contemplate larger projects that would disturb soil to a greater extent than this Proposed Action. For example, the Range Upgrade and Expansion projects resulted in construction of new training areas is undeveloped parts of the base, however, this Proposed Action only contemplates continued use of existing ranges and training areas at continued levels, slightly increased levels (within the scope of the increase analyzed in Grow the Army Force Structure Realignment), and an substantially decreased levels (equivalent to the scope of analysis presented in the *EIS for Transformation of U.S. Army Alaska*). Since this Proposed Action contemplates continued use of these areas with the continuation of the ITAM/RTLA program, it is unlikely that this Proposed Action would exceed the anticipated impacts in these prior analyses. Future actions listed above do not indicate any potentially significant project(s) in regards to soil resources that would cause this Proposed Action to rise to a level of significant impact. For example, the proposed North-South Runway Extension at JBER-Elmendorf would occur largely within an area that has already experienced gravel extraction (see *North End Runway Material Extraction and Transport Environmental Assessment*). Therefore, although the potential exists for soil resources impacts under this alternative, the Proposed Action is not anticipated to result in significant cumulative impacts.

Biological Resources. Increased training under Alternative 2 would be projected to have significant but mitigable cumulative impacts. Alternative ay require further NEPA analysis and consultations with the NMFS for ESA and MMPA compliance.

***Wetlands*.** The implementation of Alternative 2 would be anticipated to result in less than significant cumulative impacts to wetlands as is discussed in the No Action Alternative cumulative effects analysis of this PEA. However, increased use of the ERF Impact Area as a result of the implementation of Alternative 2 of this Proposed Action may require further NEPA analysis.

Water Resources. The ROI for this cumulative impacts analysis is the same as Section 4.10.9 above. There exists the potential for cumulative impacts to water resources in the form of indirect impacts from construction sites including stormwater runoff, soil impacts and loss of vegetation that may contribute to erosion and sedimentation affecting waterways, and potential impacts to groundwater as a result of any spills that may occur. On a regional level, this Proposed Action would tend to contribute to non-point source pollution, which has the potential to result in impairment of waterways and drinking water as can be seen in the case of Eagle River, Ship Creek, Chester Creek, and Campbell Creek.

Alternative 2 would result in the continuation of impacts from baseline and/or slightly increased training at ranges and training areas. However, the continued implementation and enforcement of BMPs, SWPPPs, the SPCC Plan, and JBER Oplan 19-3 in addition to other measures indicated for impacts to soil resources, vegetation, and wetlands would ensure that any potential impacts to water resources remain at acceptable levels.

The Proposed Action is within the scope of past analyses that anticipated larger scope of work and; therefore, it would be unlikely for this action to exceed the potential impacts of past actions and present a significant cumulative impact to water resources. A review of future actions listed above do not indicate any potentially significant project(s) in regards to water resources would cause this Proposed Action to rise to a level of significant impact assuming that standard BMPs are implemented for the in-water work apparent for many of the civilian projects. As to military projects, the proposed Otter Lake and Sixmile conservation projects are aimed at increasing and restoring salmon runs, although removal of invasive pike would require the application of Rotenone, which is a common practice for removal of pike. Measures would be implemented to ensure that Rotenone does not impact water quality and/or other species not targeted for removal. This process has been used in other areas of Alaska.

Therefore, although the potential exists for cumulative impacts to water resources, this Proposed Action is not anticipated to result in significant adverse cumulative impacts.

Facilities. The ROI for this cumulative impacts analysis is the same as Section 4.10.10 above. There exists the potential for cumulative impacts to facilities that include the potential for a shortage of space and/or increased need to demolish unused spaces. On a regional level, this Proposed Action would not result in shortages of housing within the surrounding community, but may result in increased renters and home construction.

Alternative 2 could lead to facility shortages within the cantonment area; however, JBER would continue to adjust its operations to meet the changing mission.

A review of past military NEPA documents indicates that this Proposed Action would not exceed the potential impacts anticipated in projects of larger scope. For example, the *Transformation EIS* analyzed impacts of relocating 4,000 Soldiers (similar to Alternative 1) and the *Grow the Army EA* analyzed impacts of relocating 1,773 Soldiers to JBER-Richardson (similar to Alternative 2). Space management efforts at JBER-Richardson ensured continuation of the mission despite the constant change. Future actions listed above would not be anticipated to cause significant impacts to facilities management at JBER.

Hazardous Material and Hazardous Waste. In spite of the fact that increased generation of hazardous material and waste is anticipated as a result of the implementation of Alternative 2, less than significant cumulative impacts are anticipated for the same reasons discussed under the No Action Alternative cumulative effects discussion.

Land Use Conflict and Compatibility. The ROI for this cumulative impacts analysis is the same as Section 4.10.13 above. There exists the potential for cumulative impacts to land use conflict and compatibility in the form of noise impacts to the surrounding community and the

environment. However, efforts are made by JBER to avoid noise impacts during certain hours and days.

The recent *F22 Plus-Up EA* indicates that increased noise generated from increased aircraft use does not hold the potential for significant individual or cumulative impacts to the surrounding community.

Alternative 2 is not anticipated to result in significant adverse cumulative impacts to land use.

Traffic and Transportation. Future actions listed above would reduce cumulative impacts to traffic (e.g., Knik Arm bridge), and would partially offset current congestion issues and potential increase in traffic at JBER caused by the implementation of Alternative 2, so that impacts to traffic remain cumulatively less than significant.

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4.11 JOINT BASE LANGLEY-EUSTIS, VIRGINIA

4.11.1 Introduction

The Fort Eustis part of Joint Base Langley-Eustis (JBLE) is located adjacent to the City of Newport News, Virginia; a very small portion of the installation lies across Skiffes Creek in James City County. It encompasses approximately 8,250 acres and approximately 12 miles northwest of downtown Newport News. The installation lies on a peninsula (Mulberry Island) located at the confluence of the James and Warwick rivers (Figure 4.11-1). For the purposes of this analysis, the portion of JBLE that will be evaluated is what used to be Fort Eustis prior to implementation of joint basing. Therefore, this analysis will still utilize "Fort Eustis" when referring specifically to the areas that may be affected within JBLE.

The surrounding land area to the north of Fort Eustis is primarily suburban with low-to-medium-density residential neighborhoods lying in the upland areas above the wetland and marsh areas of the tidal creeks that flow into the James and Warwick rivers. A four-lane divided highway provides primary access to and from the installation (Fort Eustis Boulevard/VA Route 105), connecting the post to Warwick Boulevard (U.S. Route 60), I-64, Jefferson Avenue (VA Route 143) and U.S. Route 17. There is a secondary gate off of Warwick Boulevard. The installation is served by an active rail spur connecting to a CSX rail siding in the vicinity of Lee Hall. There is a 3,020 foot airfield on the installation.

The installation mission is to host Headquarters TRADOC as well as the Atlantic Region of the Installation Management Command. The 7th SUSBDE (Forces Command [FORSCOM]) is the major Combat Support Unit on post. Specialized Parts of the U.S. Army Transportation Center & School are on Fort Eustis due to the unique facilities available here; primarily railhead, watercraft and cargo specialist operations. The 128th Aviation Brigade is also located here. Other major tenant units include the Aviation Applied Technology Directorate, Joint Task Force – Civil Support, the Army Training Support Center and the McDonald Army Health Center.

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Eustis does not anticipate any significant adverse environmental impacts as a result of the implementation of Alternative 1 (Force reduction of up to 2,700 Soldiers and Army Civilians); however, significant socioeconomic impacts to regional population and economic activity are anticipated. As Fort Eustis does not have an Active Component BCT, it is not being considered for growth as part of Alternative 2 which involves BCT restructuring. Table 4.11-1 summarizes the anticipated impacts to VECs for each alternative.

4.11.1.1 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed below in this section, no more than a beneficial or negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

Figure 4.11-1. General Location of Military Bases in Southeastern Virginia

Table 4.11-1. Fort Eustis Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 2,730
Air Quality	Minor	Beneficial
Airspace	Negligible	Negligible
Cultural Resources	Minor	Minor
Noise	Negligible	Beneficial
Soil Erosion	Negligible	Beneficial
Biological Resources	Minor	Minor
Wetlands	Minor	Beneficial
Water Resources	Negligible	Negligible
Facilities	Minor	Beneficial
Socioeconomics	Minor	Significant
Energy Demand and Generation	Minor	Beneficial
Land Use Conflict and Compatibility	Negligible	Negligible
Hazardous Materials and Hazardous Waste	Minor	Minor
Traffic and Transportation	Less than Significant	Beneficial

- ***Airspace.*** The Felker Army Airfield contains a 3,020 foot by 75 foot asphalt runway. It services various military rotor-wing aircraft from the U.S. Army and U.S. Navy. Additionally, certain U.S. Army fixed-wing aircraft (twin engine turbo propeller) utilize the Airfield. The proposed force reduction of Combat Support Soldiers at Fort Eustis would have no impact on installation airspace usage, operations or airspace utilization.
- ***Noise.*** Neither the Felker Army Airfield nor the firing range noise contours extend off post into residential areas (USACHPPM, 2007). The Proposed Action does not involve substantial changes in noise sources. The proposed downsizing should have a slight beneficial effect on noise levels due to a decreased use of the firing ranges and a reduction in noise from military vehicles. No changes in aviation or the use of Felker Army Air Field would be projected under the No Action Alternative or Alternative 1. Overall, noise impacts would be projected to be negligible.
- ***Soil Erosion.*** The soil associations on Fort Eustis fall into two general groups: (1) low river terrace and marsh soils and (2) low coastal plain soils. These soils are often poorly drained and subject to rutting and compaction (Fort Eustis, 2008). The implementation of Alternative 1 would not involve activities or projects that would result in more than negligible changes of soil resources. The proposed downsizing would be projected to have a slight beneficial effect on soil erosion due to a decreased use of training ranges.
- ***Water Resources***

  Surface Water. Fort Eustis is located on a small area of the southwest side of the Virginia peninsula on the eastern shore of the James River approximately 30 miles

upstream of its confluence with the Chesapeake Bay. Fort Eustis has over 20 miles of open tidal shoreline located along the James River to the west, the Warwick River to the east, and Skiffes Creek to the north. Fort Eustis is well drained by numerous streams and creeks and water flows have cut deep ravines in many places. Marshy conditions are frequently encountered in low-lying areas of the installation, particularly on Mulberry Island. There are two lakes on the installation, Browns Lake and Eustis Lake (Fort Eustis, 2008).

Groundwater. The hydrogeologic framework in the Fort Eustis area consists of a system of aquifers separated by intervening semi-confining units. Ground water moves under the influence of gravity to discharge areas such as streams, rivers and lakes. Recharge occurs primarily as infiltration of precipitation (Fort Eustis, 2008).

Water Supply. The installation's water system has been privatized. Old Dominion Utility Services owns the distribution system and water is purchased from Newport News Waterworks.

Wastewater. The installation's wastewater system has been privatized. Old Dominion Utility Services owns the distribution system and the wastewater is pumped to the Hampton Roads Sanitation District.

Stormwater. Stormwater runoff on Fort Eustis is controlled and directed by storm sewers and drainage ditches. The stormwater collection system discharges directly to the James and Warwick rivers or to nearby creeks, lakes, and canals that discharge to the rivers (Fort Eustis, 2008).

Neither Alternative would have more than a negligible impact to the water resources or wastewater streams at the installation. Given the current level of system support, the reduction of Soldiers would not have significant impacts to water demand and associated treatment. There would be additional water and wastewater treatment capacity generated as a result of the implementation of Alternative 1.

With current management practices, it is unlikely that an unpermitted deposition of sediment into waters would occur. A reduction in installation training activities would be projected to lead to reduced sediment run-off and impacts to surface waters.

- ***Land Use Conflicts and Compatibility.*** Fort Eustis is located adjacent to the City of Newport News, Virginia; a very small portion of the installation lies across Skiffes Creek in James City County. The installation lies on a peninsula (Mulberry Island) located at the confluence of the James and Warwick rivers (Figure 4.11-1). Land use conflicts and compatibility issues are not anticipated from the implementation of Alternative 1. Less training would be conducted as a result of Alternative 1, which could potentially allow more time for natural resource management or recreational land use.

4.11.2 Air Quality

4.11.2.1 Affected Environment

The ROI is the Hampton Roads Metropolitan Area and it is currently in attainment for all national and state standards. It is, however, an O_3 Maintenance Area due to high O_3 levels in previous years. The Fort Eustis Virginia Air Permit only regulates stationary sources.

4.11.2.2 Environmental Consequences

No Action Alternative and Alternative 1

Although there would continue to be minor short- and long-term air impacts from Fort Eustis operations they would not exceed threshold levels. Permit conditions would continue to be monitored and met, but no changes to emission sources are anticipated, other than those

mandated by maintenance, replacement, or elimination of sources as they age or are removed from service.

The implementation of Alternative 1 would have little effect on stationary sources, but would be beneficial to air quality in general because of reduced traffic and mobile source emissions. There would be less combustion and generation of CAPs and HAPs associated with military training and emissions. CO and NO_x emissions would be anticipated to decrease from reduced vehicular traffic and shorter wait times at ACPs.

4.11.3 Cultural Resources

4.11.3.1 Affected Environment

The affected environment for Fort Eustis, relating to cultural resources, is the installation footprint. Fort Eustis contains 229 known historic sites ranging from the early archaic period up to the 20th Century. Fort Eustis has two sites which are on the NRHP: the Matthew Jones House, a post-in-ground house; and Fort Carford, a Civil War earthen fort. Fort Eustis has an ICRMP, currently under revision, to help insure proper management of these resources. Cultural resources are managed by a full-time staff dedicated to supporting the military mission while protecting cultural resources found on Fort Eustis (Barry, P., et. al., 2012).

4.11.3.2 Environmental Consequences

No Action Alternative

Impacts to cultural resources under the No Action Alternative would be minor. Activities with the potential to affect cultural resources are monitored and regulated when anticipated through a variety of preventative and minimization measures.

Alternative 1: Force Reduction (Up to 2,700 Soldiers and Army Civilians)

As a result of the implementation of Alternative 1, minor impacts are anticipated at Fort Eustis. Removal of temporary facilities would have a very low potential for adverse effects to historic buildings and/or archeological resources. Most of the buildings that would be considered for demolition would fall under the Nationwide Programmatic Agreements for World War II Wooden Buildings or for Cold War Era Unaccompanied Personnel Housing. If the undertaking has the potential to adversely affect historic properties, consultation with the SHPO would occur per 36 CFR 800 as required. There is a low potential for any unique or potentially eligible historic structures to be affected as a result of this action, and if such an action is proposed, full consultation with the SHPO would occur, as required.

4.11.4 Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species)

4.11.4.1 Affected Environment

There currently are no identified federal or state threatened or endangered species known to exist on Fort Eustis; however, there are six bald eagle nesting sites on post. These must be protected under the Bald and Golden Eagle Protection Act and the MBTA, particularly during eagle nesting seasons (USATC, 2004).

4.11.4.2 Environmental Consequences

No Action Alternative and Alternative 1

Neither alternative involves major changes to installation operations and both alternatives would be anticipated to have only minor impacts to biological resources. Under each of these alternatives, negligible or minor impacts are anticipated with regard to Bald Eagles and other

species recorded as occurring on the installation. There would not be a change in the types of activities conducted on Fort Eustis as a result of either alternative, only a decrease in the frequency of training activities associated with Alternative 1. The installation would continue to manage its natural resources and potential habitat in accordance with the installation INRMP and any conservation measures identified in any ESA, Section 7 consultation documents.

4.11.5 Wetlands

4.11.5.1 Affected Environment

Fort Eustis contains one of the largest principally intact wetlands systems in the lower James River. Approximately 36 percent of the post acreage consists of various types of wetlands, some of them tidal (Fort Eustis, 2008).

4.11.5.2 Environmental Consequences

No Action Alternative

The No Action Alternative would have a minor impact to wetlands on Fort Eustis. Wetlands impacts from projects already under construction (or for which NEPA is complete and construction pending) have been assessed and, if required, appropriate mitigation and permitting have occurred. Additionally, training, personnel operations, and routine maintenance and monitoring activities on Fort Eustis would continue to occur, resulting in minimal impacts to wetlands. These are minimized by BMPs and regular maintenance of roads, ranges, training lands, and developed areas, although traffic through wetlands is avoided and activities in wetland restoration areas monitored to ensure restoration is not compromised.

Alternative 1: Force Reduction (up to 2,700 Soldiers and Army Civilians)

Beneficial impacts to wetlands as a result of the implementation of Alternative 1 are anticipated. A reduction in forces at Fort Eustis would mean roads, ranges, and training areas would be less utilized. Less vegetation would be denuded and less sediment would run off into wetlands to impair their ecological function. As such, the loss or degradation of wetland systems would occur less frequently or to a decreased extent. Increased demolition of outdated facilities on the installation could result in short-term exposure of soils and lead to some indirect sedimentation impacts to the installation's wetlands. Implementation of BMPs and measures required by SWPPPs would ensure containment and reduction of these minor short-term impacts.

4.11.6 Facilities

4.11.6.1 Affected Environment

The cantonment area is the urbanized portion of Fort Eustis, and has been developed into a wide variety of land uses that comprise the elements necessary for a complete community. This includes the installation Post Exchange, commissary, housing and Family support services, an elementary school, medical, and mission-support facilities. The environmental impact ratings for utilities, energy, and traffic and transportation are addressed in separate sections of this PEA.

4.11.6.2 Environmental Consequences

No Action Alternative

There would be minor impact anticipated under the No Action Alternative. Fort Eustis would continue to operate their current facilities. Upgrading and removal of facilities would occur as funds become available.

Alternative 1: Force Reduction (Up to 2,700 Soldiers and Army Civilians)

Alternative 1 is anticipated to have a beneficial effect on facilities, allowing the release of temporary, relocatable buildings and the demolition of some older, energy inefficient buildings. With the implementation of Alternative 1, some permanent facilities may be able to be redesignated to support units remaining at Fort Eustis to provide more space and facilities better able to meet tenant unit needs.

4.11.7 Socioeconomics

4.11.7.1 Affected Environment

The ROI includes JBLE and the surrounding communities, and consists of the cities of Hampton, Newport News, Poquoson, Williamsburg, and Gloucester, James City, and York counties. JBLE was established as a result of the 2005 BRAC. Air Force and Army installation management functions were combined into a newly designated joint base, with the Air Force assuming funding and operations support of the entire joint base.

Population and Demographics. The Fort Eustis population is measured in three different ways. The daily working population is 7,399, and consists of full-time Soldiers and Army civilian employees working on post. The population that lives on Fort Eustis consists of 2,405 Soldiers and 2,234 dependents, for a total on-post resident population of 4,639. Finally, the portion of the ROI population related to Fort Eustis is estimated to be 12,542, and consists of Soldiers, Army civilian employees, and their dependents living off post. There are also several thousand Air Force and other service members and civilian employees who work on JBLE. It is not yet known what the Air Force's plans for its workforce are. For purposes of this analysis, the PEA will focus on the changes that could be experienced by the Army military and civilian work force. More is discussed in cumulative economic effects is in Section 4.11.10.

The ROI county population is approximately 515,150. Compared to 2000, the 2010 population increased in Gloucester, James City, and York counties (Table 4.11-2). The racial and ethnic composition of the ROI is presented in Table 4.11-3.

Table 4.11-2. Population and Demographics

Region of Influence Counties and Towns	Population 2010	Population Change 2000-2010 (Percent)
Gloucester	37,000	+ 6.1
James City	67,000	+ 39.3
York	65,000	+ 15.6
Hampton	140,000	- 6.1
Newport News	180,000	+ 0.5
Poquoson	12,150	+ 5.0
Williamsburg	14,000	+ 17.3

Table 4.11-3. Racial and Ethnic Composition

State and Region of Influence Counties and Towns	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Virginia	65	19	1	8	6	2	0
Gloucester	86	9	0	3	1	2	0
James City	78	13	0	5	2	2	0
York	74	13	0	4	5	3	0
Hampton	41	49	0	5	2	3	0
Newport News	46	40	0	8	3	3	0
Poquoson	94	1	0	2	2	1	0
Williamsburg	71	14	0	7	6	3	0

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased in Gloucester, James City, and York counties and increased in the State of Virginia (Table 4.11-4). Employment, median household value, household income, and poverty levels are presented in Table 4.11-4.

Table 4.11-4. Employment, Housing, and Income

State and Region of Influence Counties and Towns	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
Virginia	3,061,186	+ 5.4	255,100	61,406	10.3
Gloucester	7,254	+ 15.4	228,100	59,331	9.3
James City	24,181	+ 95.80	348,600	73,903	7.0
York	18,384	+ 31.80	324,800	81,055	3.9
Hampton	63,021[1]	NA[2]	191,500	49,815	12.6
Newport News	82,583[1]	NA[2]	198,500	49,562	13.5
Poquoson	5,776[1]	NA[2]	326,200	84,315	4.9
Williamsburg	5,698[1]	NA[2]	344,800	50,794	16.5

[1]Non-farm employment derived from 2006-2010 American Community Survey 5-Year Estimates.
[2]Employment change not available for cities in 2006-2010 American Community Survey 5-Year Estimates.

4.11.7.2 Environmental Consequences

No Action Alternative

There would be no change or minor impacts anticipated under the No Action Alternative. This alternative is anticipated to provide a steady-state contribution of economic and social benefits and costs. No additional impacts to housing, public and social services, public schools, public safety, or recreational activities are anticipated.

Alternative 1: Force Reduction (up to 2,700[4] Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of approximately 2,700 military employees (Soldier and Army civilian employees), each with an average annual income of $41,830. In addition, this alternative would affect an estimated 1,523 spouses and 2,620 dependent children, for a total estimated potential impact to 4,143 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 6,873.

Based on the EIFS analysis, there would be significant socioeconomic impacts for population in the ROI for this alternative. There would be no significant impacts for sales volume, income, or employment. The range of values that represents a significant economic impact in accordance with the EIFS model is presented in Table 4.11-5, along with the predicted percentages for Alternative 1. Table 4.11-6 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.11-5. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	10.81	10.06	2.96	3.28
Economic Contraction Significance Value	- 8.18	- 6.52	- 2.88	- 1.00
Forecast Value	- 0.94	- 0.96	- 1.71	- 1.34

Table 4.11-6. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- $140,162,900	- $137,924,300	- 3,106 (Direct) - 567 (Indirect) - 3,673 (Total)	- 6,873
Percent	- 0.94	- 0.96	- 1.71	- 1.34

The total annual loss in direct and indirect sales in the ROI represents an estimated -0.94 percent reduction. State tax revenues would decrease by approximately $5.6 million as a result of decreased sales. Some counties within the ROI supplement the state sales tax of 4.0 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by an estimated 0.96 percent. While approximately 2,700 direct Soldier and Army government civilian positions would be lost within the ROI, EIFS estimates another 376 military contract jobs would be lost as a direct result of Alternative 1, and an additional 567 job losses would occur indirectly as a result of reduced demand for goods and services in the ROI. The total estimated reduction in employment within the ROI is projected to lead to a loss of 3,673 non-farm jobs, or a -1.71 percent change in regional non-farm employment. The total number of employed non-farm positions in the ROI is estimated to be 214,296. A significant population reduction of -1.34 percent within the ROI is

[4] Socioeconomic calculations used a number of 2,730 Soldiers and civilians for estimating socioeconomic impacts. This number was derived by assuming the loss of up to 35 percent of the installation's Active Duty Soldier population up to 15 percent of the civilian workforce. As discussed in Chapter 3, this number is rounded to the nearest hundred personnel when discussing impacts of Alternative 1.

anticipated as a result of this alternative. Of the approximately 515,150 people (including those residing on Fort Eustis) that live within the ROI, 6,873 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes Army civilian and military members and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.11-7 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.11-7. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- $124,832,269 (Local) - $187,380,275 (State)	- $138,766,089	- 3,084 (Direct) - 393 (Indirect) - 3,477 (Total)
Percent	- 0.83	- 0.96	- 1.62

The total annual loss in direct and indirect sales in the region represents an estimated -0.83 percent change in ROI sales volume according to the RECONS model, an impact that is approximately 0.11 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, state tax revenues would decrease by approximately $7.5 million as a result of the loss in revenue from sales reductions, which would be $3.21 million more in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by 0.96 percent, which would be equivalent to the reduction projected by EIFS. While up to 2,700 direct Soldier and Army civilian employee positions would be lost within the ROI, RECONS estimates another 354 military contract and service jobs would be lost, and an additional 393 job losses would occur indirectly as a result of reduced demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 3,477 jobs, or a -1.62 percent change non-farm employment within the ROI, which would be 0.09 percentage points more than projected by the EIFS model.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 1 would lead to a net reduction of economic activity within the ROI of approximately the same order of magnitude.

Population and Demographics. Fort Eustis anticipates a substantial reduction in military population and training load as a result of the implementation of Alternative 1.

Housing. Alternative 1 would increase the availability of barracks space for unaccompanied personal and increase the availability of Family quarters. This reduction along with the completion of the new AIT barracks complex would allow the demolition of four 1950 era barracks. The reduction would also increase the availability of Family quarters which are currently running over 96 percent occupancy. These outcomes will likely decrease the off-post

demand for rentals and purchases of housing; however, this decrease would be spread over the entire ROI and should not affect any one area too severely. The City of Newport News would be affected the most, but the impact would be less than significant.

Schools. The impact to schools would not be spread evenly throughout the ROI. While the upper grade dependents are more evenly spread throughout the ROI, the elementary grade dependents are concentrated in the City of Newport News mostly because the General Stanford Elementary School is located on Fort Eustis proper and its enrollment is entirely made up of Fort Eustis dependents. Also the Lee Hall Elementary School, which is the closest elementary school off post, has an enrollment of 42 percent military dependents. Alternative 1 has the potential for a significant adverse economic effect on the City of Newport News Public School system.

Public Health and Safety. As a result of the implementation of Alternative 1, Fort Eustis would likely reduce the demand for law enforcement services, fire and emergency services, and medical services both on- and off-post. The reduction in demand should have a less than significant impact to public health and safety.

Family Support Services. As a result of Alternative 1, Fort Eustis anticipates a reduced demand for Force Support Squadron (Air Force equivalent to DFMWR) programs on post. The demand for Family support services off-post will likely decrease also. The reduction in demand should have a less than significant impact to Family support services.

Recreation Facilities. Use of recreation facilities on-post would likely decline somewhat as a result of Alternative 1. Fort Eustis anticipates that the utilization decreases would be less than significant.

Environmental Justice. As a result of the implementation of Alternative 1, Fort Eustis does not anticipate a disproportionate adverse impact to minorities, economically disadvantaged populations, or children would occur in the ROI. Fort Eustis anticipates that job loss would be felt across economic sectors and at all income levels and spread geographically throughout the ROI. The proposed force reduction in military authorizations on Fort Eustis would not have disproportionate or adverse health effects on low-income or minority populations in the ROI. The racial and ethnic composition of the ROI differs from that of the Commonwealth as a whole. There are slightly fewer Hispanic and Asian people in the ROI, but a larger African American population in some affected areas. The City of Hampton is 49 percent African American and the City of Newport News 40 percent, compared with 19 percent for the Commonwealth as a whole. Seen at the state-wide level, adverse impacts in the ROI represent a disproportionate adverse impact to African Americans, with marginally less-than-expected impact to Hispanic and Asian populations. Impacts to schools and housing would affect Newport News, a city with African-American population higher than the state average. In this respect, the impact has a disproportionate adverse impact on minority populations.

4.11.8 Energy Demand and Generation

4.11.8.1 Affected Environment

Utilities are generally connected across the cantonment area and along defined utility corridors and; therefore, contribute collectively to the overall capacity, use, and storage as a unit. As such, the ROI for this resource is the cantonment area of Fort Eustis and the various utility ROW that connect Fort Eustis with the regional systems.

Electric power is provided by Dominion Virginia Power and is distributed via overhead lines to Fort Eustis and the surrounding communities. Natural Gas is supplied by Virginia Natural Gas.

4.11.8.2 Environmental Consequences

No Action Alternative and Alternative 1

Under the No Action Alternative, energy demand and consumption would have negligible impacts. As a result of the implementation of Alternative 1, the installation would anticipate a reduction in energy consumption. The loss of up to 2,700 Soldiers and civilians compared with the installations full-time military and civilian population of approximately 11,000 personnel represents a loss of approximately one quarter of the full-time military and civilian population. Such a reduction could lead to up to a 15 percent decrease in energy demand to support installation operations. Fort Eustis' pursuit of energy efficiency and conservation measures would also contribute to reduced energy usage and energy demand reductions. The proposed force reduction would also allow the Air Force to demolish older less energy efficient structures to improve installation's energy efficiency. Overall, Alternative 1 would result in minor beneficial impacts.

4.11.9 Hazardous Materials and Hazardous Waste

4.11.9.1 Affected Environment

The affected environment includes the use, storage, transport, and disposal of hazardous materials and wastes at Fort Eustis. Fort Eustis has both a Hazardous Waste Facility and a Solid Waste, Recycling, and Pollution Prevention Center to handle all types of waste from units and facilities on Fort Eustis. Hazardous materials and wastes are handled, stored and transported in accordance with Transportation Center Fort Eustis (TCFE) Regulation 200-6, Environmental Management (to be replaced by JBLEI 32-101, Environmental Management).

4.11.9.2 Environmental Consequences

No Action Alternative

There would be minor impacts anticipated under the No Action Alternative. Fort Eustis would continue dispose of waste and store and manage hazardous materials in accordance with installation hazardous waste and material management plans.

Alternative 1: Force Reduction (up to 2,700 Soldiers and Army Civilians)

There would be a moderate, short-term increase in the amount of hazardous waste handled and turned-in to the hazardous waste facility by departing or phased out units, and resulting from the demolition of buildings which may contain asbestos or LBPs. This short-term increase in hazardous waste as a result of the implementation of Alternative 1, would be a minor impact at Fort Eustis. Over the long term, force reduction would result in the generation of less solid and hazardous waste produced.

4.11.10 Traffic and Transportation

4.11.10.1 Affected Environment

A four-lane divided highway provides primary access to and from the installation (Fort Eustis Boulevard/VA Route 105), connecting the post to Warwick Boulevard (U.S. Route 60), I-64, Jefferson Avenue (VA Route 143) and U.S. Route 17. There is a secondary gate off of Warwick Boulevard.

4.11.10.2 Environmental Consequences

No Action Alternative

There has been an increase in traffic on the installation from the BRAC 2005 organizations that moved on post as well as the increases in manning that resulted from Grow the Army actions.

Under No Action Alternative, there would be no additional unit stationing or force reduction. Current traffic conditions would remain the status quo with less than significant impacts.

Alternative 1: Force Reduction (up to 2,700 Soldiers and Army Civilians)

Alternative 1 is anticipated have a beneficial effect on the traffic both on and off post. The reduction of up to 2,700 Soldiers, Army civilians and their dependents would considerably reduce traffic moving into and out of Fort Eustis, particularly during peak hours through the main ACP. Overall impacts of the implementation of force reduction would be beneficial to traffic and the capacity of existing transportation systems.

4.11.11 Cumulative Effects

The activities and missions at Fort Eustis continue to evolve over time. There are plans to extend the runway at Felker Army Airfield and to build a new facility for the Flight Concepts Division. The No Action Alternative and Alternative 1 would have very minor impacts on the Fort Eustis environment when compared to such major infrastructure improvements. As part of any developments at Fort Eustis the impacts would be assessed as required by NEPA and the results furnished to the decision makers prior to a decision. The region surrounding Fort Eustis has a high density of military, DoD contractor and government jobs, one of the highest concentrations of government employment in the Nation. Although the direct and indirect effects of force reduction at Fort Eustis would be considered significant only in terms of population loss within the ROI, the Hampton Roads area, in which Fort Eustis is located has a very large military population that could experience a greater cumulative socioeconomic impact from other military service reductions in the region when combined with the Army's proposed force reductions. The full extent of military service reductions on the ROI is as of yet not known. Thus, cumulative impacts of combined military service reductions and private defense contractor employment reductions, when considered in conjunction with proposed Army reductions, may have a much larger significant impact on the ROI than just the direct significant impacts to ROI population that is estimated by EIFS. Government hiring freezes and cuts could have significant adverse cumulative socioeconomic impacts to employment, income, sales volume and other economic parameters within the ROI when all reductions are cumulatively considered. Additionally, cumulative employment reduction could lead to considerable reduction in state and local tax revenue.

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4.12 JOINT BASE LEWIS-McCHORD, WASHINGTON

4.12.1 Introduction

Joint Base Lewis-McChord (JBLM), is located in Pierce and Thurston counties of Western Washington and has approximately 65,000 acres of maneuver area suited for vehicle and non-vehicular military training (Figure 4.12-1). In the past it has been the home of light infantry, armored, and motorized division level units. Presently, it is home base for I Corps, 62nd Airlift Wing, Special Operations Forces, Madigan Army Medical Center, and Reserve Officers Training Corps summer camp. JBLM supports the training and administrative requirements of 3 SBCTs stationed at the installation. In October of 2010, McChord Air Force Base and Fort Lewis combined to form JBLM with the Army taking over base operations for the Air Force.[5]

Figure 4.12-1. Joint Base Lewis-McChord

JBLM has a well-developed range infrastructure that supports individual and crew-served weapons live-fire training. Larger weapons systems training (e.g., Stryker Mobile Gun System) and large-scale maneuver training occur at the Yakima Training Center in Central Washington.

[5]References produced prior to October 2010 will retain their Fort Lewis designation. References after 2010 are JBLM reference materials.

4.12.1.1 Valued Environmental Components

JBLM does not anticipate any significant adverse environmental impacts as a result of the implementation of Alternative 1 (Force reduction of 8,000 Soldiers and Army Civilians). Table 4.12-1 summarizes the anticipated impacts to VECs from each alternative.

Table 4.12-1. Joint Base Lewis-McChord Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 8,000
Air Quality	Less than Significant	Minor
Airspace	Less than Significant	Negligible
Cultural Resources	Less than Significant	Minor
Noise	Significant	Less than Significant
Soil Erosion	Negligible	Negligible
Biological Resources	Less than Significant	Beneficial
Wetlands	Negligible	Negligible
Water Resources	Significant but Mitigable	Beneficial
Facilities	Less than Significant	Beneficial
Socioeconomics	Significant but Mitigable	Less than Significant
Energy Demand and Generation	Negligible	Beneficial
Land Use Conflict and Compatibility	Minor	Beneficial
Hazardous Materials and Hazardous Waste	Minor	Less than Significant
Traffic and Transportation	Significant	Beneficial

4.12.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section, no more than a negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- ***Soil Erosion.*** The topography of JBLM is typically flat to gently rolling, with localized areas of moderately sloping lands. The slopes are generally less than 15 percent, except along the steep escarpments along the Nisqually River and Puget Sound. The geological units underlying JBLM are primarily the result of glacial and alluvial processes; therefore, the soils are coarsely textured, loose and highly permeable. Due to the high percolation rate and the flat layout of JBLM, as well as the quick regeneration of vegetative soils cover at JBLM, soils are not prone to high levels of erosion.

Negligible impacts would result as part of the implementation of both alternatives considered. Military training has limited effect on soils at JBLM because of the installation's soils, geography, vegetation and ecology.

- ***Wetlands.*** JBLM contains approximately 4,500 acres of wetlands spread over 91,000 installation acres. Wetland types include emergent, scrub-shrub, and forested. JBLM limits the types of activities that can occur within 164 feet of all wetlands on the installation (Fort Lewis, 2007). Off-road vehicle traffic, bivouacking, digging, and assembly areas are prohibited within the 164-foot buffer area that the installation designates around wetlands. Refueling, gray water sumps, and vehicle decontamination activities are prohibited within 164-foot of wetlands and water bodies. Trainers are provided an Environmental Coordination Map that delineates all sensitive resources on the installation including wetlands and water bodies and their associated restrictions and prohibitions. This information is provided to ensure Soldiers are aware both of sensitive areas to avoid and the installation's training restrictions. The anticipated impact to JBLM under both alternatives is negligible.
- ***Energy Demand and Generation.*** The anticipated impact to JBLM would be negligible to beneficial in terms of energy use and generation under the No Action Alternative. The existing energy infrastructure at the installation has sufficient capacity to support the implementation of the No Action Alternative. Energy demand would be considerably reduced with the loss of up to 8,000 Soldiers, civilians and their Families. This reduction in demand would result in beneficial impacts to energy demand and additional capacity for other uses.

Joint Base Lewis-McChord anticipates that the implementation of any of the alternatives would result in negligible impacts for those VECs discussed above. The following provides a discussion of the VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Proposed Action alternatives.

4.12.2 Air Quality

4.12.2.1 Affected Environment

The affected environment for this Proposed Action includes air emissions associated within the Puget Sound region. Air quality regulation is carried out by the Puget Sound Clean Air Agency in Pierce County, and by the Olympic Region Clean Air Agency in Thurston County. The existing air quality in the JBLM area is good. The major sources of air pollution are PM and vehicular emissions, which contribute to the formation of O_3. The Washington Department of Ecology has designated the entire State of Washington as in attainment with the NAAQS for O_3. In addition, the entire western Washington region is either in attainment for CO or is unclassified for attainment. These areas are treated as attainment areas by the Washington Department of Ecology. JBLM is located in an unclassifiable area for PM_{10}, and in an area that was previously designated as a nonattainment area for both O_3 and CO. As part of the redesignation process, the state submitted a maintenance plan under which JBLM can continue to maintain attainment standards for a 10-year period.

Opacity is regulated at JBLM under the jurisdiction of the local air pollution control agencies. The closest PSD Class I area to JBLM is Mount Rainier National Park, which is located approximately 50 miles to the east.

The primary emission sources at JBLM are motor vehicles and industrial sources. Industrial sources include aerospace maintenance and rework operations, fuel burning, fuel storage and dispensing, degreasing, woodworking, and painting operations.

Currently, JBLM maintains a "Synthetic Minor" operating permit which means that any increase in stationary source emissions could require the transition back to major source status. Additional thresholds are pollutant-specific for nonattainment and maintenance areas. Portions of JBLM (northern half) are partially within an O_3 (a product of VOCs and NO_x reacting in the atmosphere) and CO maintenance area. Actions at JBLM resulting in an increase of 100 tpy of O_3 or CO would trigger a conformity analysis.

4.12.2.2 Environmental Consequences

No Action Alternative

There would continue to be less than significant environmental impacts under the No Action Alternative. Dust and exhaust emissions, including pollutants, would be generated from soil-disturbing activities, such as; demolition at construction sites, operation of heavy equipment, and vehicular traffic. Dust and vehicle emissions would continue to be generated during training maneuvers with military vehicles and aircraft. No change to the type or frequency of training events would occur. Although there would continue to be minor short- and long-term fugitive dust impacts from training, these impacts would not exceed threshold levels. Permit conditions would continue to be monitored and met, but no changes to or increases in emission sources are anticipated, other than those mandated by maintenance, replacement, or elimination of sources as they age or are removed from service. Therefore, impacts to air quality under the No Action Alternative would be less than significant.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have both minor short-term and beneficial long-term impacts. Alternative 1 would result in some beneficial impacts to air quality resulting from the reduction in unit training events and the accompanying reduction in the combustion of fuels resulting in lower emissions from stationary and mobile sources. Conditions identified in air permits would continue to be monitored and may require changes as a result of this alternative. Permits may require modification to reflect the lowered emission levels resulting from less combustion and generation NAAQS pollutants and HAPs associated with the reduction in the number of Soldiers engaged in military training. In addition, there would be less fugitive dust generated from fewer unit training events. Short-term minor adverse impacts to air emissions would be anticipated in conjunction with increased use of construction equipment for the demolition of outdated facilities. When both the short-term minor increase and long-term reduction of emissions are considered together, the overall impact would be minor.

4.12.3 Airspace

4.12.3.1 Affected Environment

JBLM has 55 square miles of FAA-designated SUA, up to 14,000 feet. The installation has access to this airspace in area R6703, Sub-Areas A, B, and D from 7:00 a.m. to 11:00 p.m. daily Mondays through Fridays. Sub-Area C is scheduled by Notice to Airmen (JBLM, 2012).

The primary purpose for R6703 is live-fire training with artillery, mortars, small arms, and demolitions. The airspace also supports helicopter and U.S. Air Force aircraft training. FAA has designated portions of JBLM airspace as SUA. Restricted areas within the SUA may be activated, in which case nonmilitary and unauthorized military aircraft are prohibited from entering the airspace.

4.12.3.2 Environmental Consequences

No Action Alternative

The No Action Alternative would be projected to have less than significant impacts at JBLM. Current airspace use is heavy for both civilian and military airspace requirements. The use of airspace on the installation is scheduled through Gray Army Airfield. The activities competing for use of the airspace are gunnery, pilot training, and UAS training. With the stationing of a CAB and the increased use of UASs, JBLM is anticipating a less than significant impact to airspace. Use of this airspace would continue to be managed through scheduling and balancing training requirements with airspace availability. The No Action Alternative would not produce any additional conflicts with overlying restricted airspace, as no proposed change to existing conditions would occur.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have negligible impacts to airspace, as military airspace requirements would not change substantially with the loss of ground units. Aviation and UAS units would continue to require airspace to support training, but at a marginally lower utilization level. Aviation support activities in the form of joint helicopter operations with the SBCT would be slightly reduced. Within the context of the total aviation training requirement of all aviation assets on JBLM, this would be a very small reduction of the installation's training requirements load.

4.12.4 Cultural Resources

4.12.4.1 Affected Environment

JBLM represents the affected environment or area of effect for potential impacts to cultural resources. Planning level surveys have been completed for all but approximately 20 percent of the installation. JBLM has almost 350 recorded archaeological sites, including: American Indian villages, camps, and households dating from 8,500 years ago to the Nisqually Reservation period (1854-1917); British farms operated by the Hudson's Bay Company (1832-1869); American pioneer homesteads (1846-1942); and World War I, World War II, Korean War, and Vietnam-era military training features. Planning-level surveys to characterize the types of archaeological resources that might be present have been completed for most areas of JBLM. More detailed sub-surface archaeological inventories are needed on a case-by-case basis to determine whether new construction or military training activities would affect presently unidentified archaeological resources. Most recorded archaeological sites have not been evaluated for NRHP eligibility.

JBLM has three NRHP-eligible historic districts including more than 400 contributing historic buildings, structures and objects built between 1917 and 1948. The JBLM Museum, built in 1919 as the Salvation Army Red Shield Inn, has been listed on the NRHP since 1979.

JBLM lies within the traditional homelands of the Nisqually Indian Tribe, and the Tribe exercises treaty-reserved rights to hunt, fish, and gather at all their usual and accustomed places. More than two-thirds of the Nisqually Indian Reservation was condemned by Pierce County and donated to the U.S. Government for the purpose of establishing Camp Lewis in 1918. The remaining Nisqually Indian Reservation lands lie immediately adjacent to the JBLM boundary. The Squaxin Island Tribe and the Puyallup Tribe of Indians also exercise treaty-reserved rights to hunt, fish, and gather at all their usual and accustomed places on JBLM. All three Tribes recognize sacred sites and TCPs on JBLM lands. The DoD American Indian and Alaska Native Policy establishes principles for interacting and working with federally-recognized Tribes on matters that may affect these or other protected tribal resources.

4.12.4.2 Environmental Consequences

No Action Alternative

The No Action Alternative would have a less than significant effect on cultural resources. Potential impacts to archaeological sites from the failure of site protection measures could result in the eventual loss of important archaeological data. Mitigation identified in the JBLM Grow the Army ROD (Fort Lewis, 2011) would continue to be implemented to offset this loss and result in environmental impacts that are less than significant. Activities with the potential to affect cultural resources are monitored and regulated when anticipated through a variety of preventative and minimization measures. JBLM has a Programmatic Agreement in place to facilitate the management of historic and prehistoric resources on the installation. The SHPO periodically reviews the effectiveness of the Programmatic Agreement to deal with cultural resource management on the installation.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have a minor impact to cultural resources. Removal of temporary facilities vacated by departing units would have a very low potential for adverse impacts to archeological resources due to the minimal amount of ground disturbance associated with such actions. Removal of outdated and under-utilized infrastructure has the potential to affect historic structures, but would be conducted in accordance with the current cultural resource management procedures. If an undertaking does not fall within the Programmatic Agreement and has the potential to adversely affect historic properties, consultation with the SHPO would occur, per 36 CFR 800, as required. Currently, few historic structures are not pre-mitigated for future demolition and modification via the Programmatic Agreement, stand-alone/group Memorandums of Understanding, or other installation and SHPO agreements. Thus, there is a low potential for potentially eligible historic structures to be affected as a result of this action.

The reduction of Soldier training requirements could potentially reduce off-road heavy and light vehicle maneuvers. This could have a beneficial effect on archaeological sites and protected tribal resources. Overall, the impact on cultural resources would be a minor impact.

4.12.5 Noise

4.12.5.1 Affected Environment

The main sources of noise from JBLM training activities include aviation, munitions detonations; and gunnery (artillery, mortars, and small arms) (Fort Lewis, 2004). Aviation is presently conducted by units flying Chinook, Blackhawk, Kiowa, and Apache helicopters. Air Force C-17 aviation training is conducted by two units on JBLM. Gunnery includes 105mm and 155mm howitzers; 60mm, 81mm, and 120mm mortars; and .50 caliber machine guns. Demolition training is limited to specific ranges and poundage per charge. Noise receptors predominantly include residents of several small towns near the installation and the Nisqually Tribe (Fort Lewis, 2005). The number of noise complaints received by the installation over the last 15 years averages approximately 170 per year.

4.12.5.2 Environmental Consequences

No Action Alternative

The current noise impacts from JBLM's training represents a significant adverse impact (Fort Lewis, 2010). Main sources of noise at JBLM impacting the regional acoustic environment include aircraft (rotary- and fixed-wing) flyovers from Gray Army Airfield and McChord Field, munitions detonations, and artillery, mortar, and small arms live fire.

Other activities, such as ground maneuver training and exercises resulting in noise created by personnel and vehicles, would continue to contribute noise on JBLM, to the same levels and intensity as historically experienced. Noise from small arms weapons fire, such as the .50 caliber machine gun and other weapons systems, does travel off post and is routinely heard off the installation by nearby residents. JBLM strives to mitigate noise impacts through restrictions in aviation training and scheduling of training activities to reduce noise complaints. In spite of these measures, noise impacts would continue to be significant. Noise mitigation recommendations for the protection of biological resources are found within the installation's IONMP. These mitigation measures would continue to be implemented in accordance with available funding.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have an anticipated decrease in noise impacts. Existing ranges would still be utilized for firing the same types of weapons systems and conducting the same types of training. JBLM's BCTs would also continue to conduct maneuver and live-fire training in the field; however, there would be a reduction in the frequency of noise generating training events, which would be in proportion with the number of Soldiers stationed at the installation. A reduction of up to 8,000 Soldiers and Army civilians would result in a decrease in the size of annual noise contours, as the frequency of noise generating events would decrease; though, peak noise contours and the types of noise generating impacts would remain the same. Aviation on JBLM would not be impacted by these decisions; therefore, the current frequency and activities of aviation training activities, a contributor of noise at the installation, would not be anticipated to change. Some short-term noise impacts from facilities demolition and removal would be anticipated. Overall, impacts to noise would be less than significant.

4.12.6 Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species)

4.12.6.1 Affected Environment

***Vegetation*.** Forests are the largest ecosystem type on JBLM predominately consisting of coniferous forests dominated by Douglas-fir. A significant portion of the JBLM complex contains native grasslands. These represent some of the last remaining grasslands in western Washington. Oak woodlands occur predominantly on grassland margins and provide important transitional wildlife habitat between grassland and forest ecosystems. Approximately 4,500 acres of wetlands are found on JBLM.

***Wildlife*.** JBLM has a mosaic of plant community distributions and productive wildlife habitats utilized by approximately 20 species of reptiles and amphibians, 200 species of birds, 50 species of butterflies, and 50 species of mammals.

***Threatened and Endangered Species*.** There is one threatened plant species found on JBLM. The species is water howellia and it is a marshland plant. Threatened and endangered fish species, including Puget Sound Chinook, Steelhead, and Bull Trout, are found in the Nisqually River, which borders the installation and feeds into Puget Sound.

***Candidate Species*.** Four candidate species occurring on JBLM have the potential to become listed in the near future. These species are the Mardon Skipper butterfly, Mazama Pocket Gopher, Taylor's Checkerspot butterfly, and the Streaked Horned Lark. On October 11, 2012, the USFWS published an announcement in the Federal Register proposing that the Taylor's Checkerspot butterfly be listed as endangered and the Streaked-horned Lark be listed as threatened under the ESA. Critical habitat was proposed for both species in the same announcement, with a substantial portion proposed to be on JBLM. JBLM currently has an

ACUB program that is designed to protect off-post habitat for these and two other candidate species.

4.12.6.2 Environmental Consequences

No Action Alternative

The growth of JBLM under the Grow the Army was expected to result in significant impacts to biological resources at JBLM (Fort Lewis, 2010). Mitigation to reduce these impacts has occurred since the Grow the Army action, thus implementation of the No Action Alternative is anticipated to result in less than significant impacts. At this level of troop strength, use of training areas and ranges remains high. JBLM would continue to adhere to its existing natural resource management plans and to further minimize and monitor any potential impacts. Units are briefed prior to training events regarding sensitive areas on post, such as protected species habitat, and what training is and is not allowed within certain areas where sensitive species may be found. Range capabilities and timber management activities on JBLM are ongoing and would continue as a result of this alternative, as outlined in the installation's Forest Management Strategy, to support troop training, endangered species management, the Army's timber program, and sustainable forest health.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

The impact for biological resources would be beneficialas a result of the implementation of Alternative 1. Scheduling conflicts for training area access to conduct resource monitoring would be reduced. Proactive conservation management practices and mitigations would be more easily accomplished with reduced training, including having easier access to training areas to implement wildlife management activities. Impacts to vegetation in prairies would occur less frequently and prairie vegetation would have longer rest and recovery periods between training events. Even though damage to prairie vegetation takes several years to fully recover, any and all rest periods are helpful. As the number of vehicles decreases, reduced impacts to candidate species on the installation would be anticipated. The decrease in vehicular and Soldier foot traffic could potentially improve reproductive success for ground nesting birds. Decreased disturbance to vegetation at the installation may result in better ground cover and reduction of non-native species with an overall increase in the native species diversity.

4.12.7 Water Resources

4.12.7.1 Affected Environment

***Water Supply and Demand*.** JBLM operates five public water systems that are served entirely by groundwater sources. The primary water system provides potable water to over 50,000 people in the Lewis Main and Lewis North areas. The four other potable water systems (McChord Field, Golf Course, ASP and Range 17) serve other areas of the installation. There are no inter-ties between any of these five sources.

There are eleven wells and a protected spring source, Sequalitchew Springs. There are twelve water storage reservoirs that serve the system and have a total storage capacity of 6.8 million gallons. The total supply capacity of Sequalitchew Springs and the nine active wells is 15,450 gpm. For the 2004 to 2010 timeframe, the average daily demand was 3.89 mgd and the maximum daily demand was 8.86 mgd. The system supporting Lewis Main and Lewis North has adequate source and storage capacity to serve an effective population of over 63,000, as described in Section 3 of the Water System Plan. This action is not anticipated to have an effect on the McChord Field water system, which is separate from the Lewis Main/North system.

***Wastewater*.** The wastewater treatment system on JBLM collects industrial and domestic wastewater from all of JBLM to include McChord Field, the Veterans Administration American Lake Hospital, and Washington Army National Guard's Camp Murray. There are no combined sewer overflows on JBLM; all wastewater collection lines on the installation are separate from the stormwater drainage system.

The installation's wastewater treatment system has a permitted capacity of 7.0 mgd and a hydraulic capacity of 15 mgd. In FY 2011, the WWTP treated a total of 1,491 million gallons of wastewater, for an average daily flow of 4.08 mgd. As mitigation for the Grow the Army action, the Army would construct a new WWTP. This plant would eliminate any future violations of water quality standards JBLM has been receiving as a result of the failure of the existing facility to adequately treat JBLM effluent going to Puget Sound. The new plant would also address the ability of JBLM to stay in compliance with the new, more stringent EPA thresholds for effluent discharge.

***Surface Water*.** Four major source water drainage basins occur on JBLM: The Nisqually River basin, the Sequalitchew Creek basin (including American Lake), the Deschutes River basin, and the Chambers-Clover Creek basin. The Nisqually River crosses through the installation and empties into Puget Sound. The installation has six lakes or marshes that are over 100 acres in size. The main bodies of water in the cantonment area of JBLM include American Lake, American Lake Marsh, Bell Marsh, Elliot Marsh, Hamer Marsh, Kennedy Marsh, Lynn Lake, McKay Marsh, Murray Creek, Muck Creek, Sears Lake, Sequalitchew Creek, Sequalitchew Lake, Carter Lake, Morey Pond, Morey Creek and Clover Creek.

***Stormwater*.** On JBLM, stormwater is discharged to waters of the U.S. in accordance with the NPDES. Current permit coverage includes the Multi-Sector General Permit for Industrial Processes and the Construction General Permit. A JBLM MS4 Permit is pending (2012). Stormwater drains to treatment facilities which remove solids and oil and provide for infiltration. These facilities overflow to a system of marshes. The marshes overflow to the JBLM stormwater canal on Lewis North which conveys stormwater from Lewis Main and Lewis North into Puget Sound at Solo Point. The JBLM stormwater collection and conveyance system is currently at or near capacity for most of the cantonment area. On-site infiltration is required for most new construction. Significant areas of development within the cantonment have incorporated onsite-infiltration. The remaining cantonment areas, mostly encompassing residential communities, drain to surface waters through a number of small stormwater systems.

4.12.7.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, there is the potential for water quality violations from wastewater effluent leaving the installation that contributes to a potentially significant water quality impact. This would remain a significant but a mitigable impact. The Army has planned the construction of a new WWTP at Solo Point to improve sewage treatment and effluent quality to minimize impacts. Currently, the upgrade of the WWTP is in design and it is anticipated that construction would proceed in 2013. There are minor impacts associated with water supply and demand, surface water, or stormwater as a result of this alternative. No change from existing conditions or previously proposed projects would occur. As discussed above, the installation is pursuing a NPDES permit which should be granted in 2012 to cover discharged effluent from the outflow of the WWTP. JBLM would adhere to the requirements of the permit. Training activities would continue, both on ranges and training lands, with minor impacts mitigated via the ITAM land rehabilitation program. Mitigations would result in a less than significant impact to water resources under the No Action Alternative.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have an anticipated beneficial impact to water resources. A loss of up to 8,000 Soldiers would reduce traffic in JBLM's training areas, roads, and ranges, decreasing the chance of potential surface water impacts and sedimentation. The demand for potable water would also be diminished, and implementation of Alternative 1 would create additional treated wastewater capacity for other uses at the installation. Reduced motorpool activities and less frequent washing of field-driven Stryker and wheeled support vehicles would produce a decrease on water demand and associated treatment. The beneficial impact would further increase when the WWTP becomes operational.

4.12.8 Facilities

4.12.8.1 Affected Environment

There are approximately 4,400 buildings on JBLM, about half of which are used for Family housing. The other half are for administrative, dining, recreation, emergency services, vehicle and aviation maintenance, and garrison maintenance shops. The road system on the installation is in the process of receiving upgrades to major arterials consistent with the installation master plan. Water treatment and distribution systems are discussed in Section 4.12.7.1.

4.12.8.2 Environmental Consequences

No Action Alternative

There would be less than significant impacts to the facilities at JBLM under the No Action Alternative. The installation is in the process of building additional Family housing units to accommodate Soldiers and their Families. JBLM's current facility shortfalls have been prioritized and are seeking or have received Army funding. The installation would continue to implement the Army's FRP at JBLM. Environmental analyses of the projects that result from these programs are conducted prior to implementation.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have an anticipated beneficial impact on facilities. The reduction of up to 8,000 Soldiers and their dependents would alleviate some of the on-post military housing shortfalls at JBLM. An increase in the FRP and facilities demolition at JBLM would occur as a result of this alternative. Older, less efficient facilities nearing the end of their life-cycle would be demolished to save the Army money on maintenance and energy requirements. Remaining units with inadequate facilities could occupy facilities that better support unit administrative requirements. Training areas would also have less scheduling conflicts from reduced training load.

4.12.9 Socioeconomics

4.12.9.1 Affected Environment

JBLM is located about 9 miles south-southwest of Tacoma, Washington. It was established as a result of the 2005 BRAC. Air Force and Army installation management functions were combined into a joint base, with the Army assuming funding and operations support of the entire joint base. The ROI consists of Pierce and Thurston counties. Twenty three school districts provide educational services to JBLM school children.

Population and Demographics. The JBLM population is measured in three different ways. The daily working population is 36,323, and consists of full-time Soldiers and Army civilians working on post. The population that lives on JBLM consists of 27,765 Soldiers and dependents. Finally, the portion of the ROI population living off post directly related to JBLM is 47,215 and

consists of Soldiers, civilian employees, and their dependents. There are also about 3,145 Air Force service members and 1,415 Air Force civilian employees who work on JBLM. The Army does not yet know the Air Force's plans for its workforce. For purposes of this analysis, the changes that could be experienced by the Army military and civilian work force will be discussed. Additional discussion on cumulative economic effects is in Section 4.12.13.

The ROI population is almost 1,050,000. Compared to 2000, the 2010 population increased in Pierce and Thurston counties by more than 10 percent in each county (Table 4.12-2). The racial and ethnic composition of the ROI is presented in Table 4.12-3.

Table 4.12-2. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Pierce	800,000	+ 13.5
Thurston	250,000	+ 21.7

Table 4.12-3. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Washington	73	3	7	11	1	4	1
Pierce	70	6	1	9	6	6	1
Thurston	79	3	1	7	5	4	1

Employment and Income. Compared to 2000, the 2009 employment (private nonfarm) increased the State of Washington and Pierce and Thurston counties (Table 4.12-4). Employment, median home value, and median household income, and poverty levels are presented in Table 4.12-4.

Table 4.12-4. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
Washington	2,385,282	+ 5.21	277,600	56,479	12.30
Pierce	228,905	+ 9.90	262,400	55,941	12.30
Thurston	64,807	+ 22.30	257,800	60,930	10.30

Housing. JBLM has 4,936 privatized Family housing units for military Families with a planned end-state inventory of 4,994 units by 2018: 520 for officers and 4,474 for enlisted personnel. Barracks (Army) and dormitory (Air Force) spaces for unaccompanied personnel total 12,008 and 604, respectively.

Schools. Children of military personnel attend school at numerous ROI communities. The 2010 Final Environmental Impact Statement for Fort Lewis Army Growth and Realignment found that there are 23 school districts in the ROI, which had a total combined enrollment of 239,164

in 2008. Clover Park School District operates the five on-post elementary schools at JBLM, as well as a total of 20 other schools (elementary, middle school, and high school) in the City of Lakewood, adjacent to the installation. In 2008, 36 percent of the CPSD's average daily attendance consisted of federally-connected students; and smaller, yet noticeable, concentrations of federally-connected students were evident in the Steilacoom Historical School District (17 percent of average daily attendance) and Yelm School District (7 percent of average daily attendance). These numbers represent a 9 percent Clover Park School District and 13 percent Steilacoom Historical School District increase in student enrollment. Many of the ROI's school districts' facilities are currently at or over capacity, which was considered a significant impact of the GTA population increase at JBLM (Fort Lewis, 2010).

Public Health and Safety

Police. The JBLM Police Department, a part of the Directorate of Emergency Services, provides law enforcement and property protection for the installation. Police functions include protecting life and property, enforcing criminal law, conducting investigations, regulating traffic, providing crowd control, and performing other public safety duties. City, county, and state police departments provide law enforcement in the ROI.

Fire. The JBLM Fire Division, a part of the Directorate of Emergency Services, has emergency response teams capable of providing emergency medical, hazardous material, fire rescue, fire suppression, and consequence management to mitigate the effects of both natural and manmade disasters at JBLM. In part because JBLM straddles several miles of I-5, the JBLM Fire Division is often called upon to provide first responder assistance for vehicle collisions and other incidents on I-5 as well. Non-emergency services are also provided on the installation, including code enforcement, loss prevention, effective fire prevention, and public education programs.

Medical. JBLM supports a range of medical services both on and off the installation. The Madigan Healthcare System is a network of Army medical facilities located throughout Washington, Oregon, and California that serves more than 109,000 Active Duty service members, their Families, retirees and their Families, and is headquartered at Madigan Army Medical Center (MAMC) on JBLM. MAMC is the Army's second largest Military Treatment Facility (MTF). It includes a Level II Trauma Center, and 240 inpatient beds. The Trauma Center serves non-military personnel from the surrounding community as needed. MAMC has a staff of over 5,000 and is the fifth largest employer in Pierce County. MAMC services include allergy-immunology, behavioral health, emergency services, family medicine, internal medicine, OB/GYN, optometry, pediatrics, pharmacy, preventive medicine, surgery, and substance abuse. There are four additional smaller health clinics on Lewis Main, Lewis North, and McChord Field, as well as a community clinic in the City of Puyallup for Family members living off the installation to the east. A second community clinic is scheduled to open in south Puget Sound in late 2012. This clinic will serve Family members residing in Olympia, Lacey, and Yelm. JBLM also provides dental services and supports a Warrior Transition Battalion.

Family Support Services. The JBLM FMWR and Army Community Service provide programs, activities, facilities, services, and information to support Soldiers and Families. Services provided include child care, youth programs, deployment readiness for Families, employment readiness, financial readiness, relocation readiness, Exceptional Family Member Program (EFMP) support, Warrior in Transition support, and survivor outreach.

Recreation Facilities. JBLM facilities or programs for recreation include fitness centers, swimming pools, athletic fields, golf course, bowling center, skeet range, outdoor recreation opportunities, sports teams, and a Warrior Zone.

4.12.9.2 Environmental Consequences

No Action Alternative

The No Action Alternative would result in significant but mitigable impacts to existing socioeconomic resources. JBLM's continuing operations represent a beneficial source of regional economic activity. With the present housing market conditions, it is estimated that there would be no shortage of units for either home ownership or rental units. There is presently an initiative to build two new elementary schools on the installation which should help to mitigate school crowding within the ROI. These new schools would have approximately double the capacity of existing on-post schools. Several off-post school districts are coping with the influx of the additional school-aged children as a result of the "Grow the Army" action. No additional impacts to housing, public and social services, public schools, public safety, recreational activities, or environmental justice are anticipated.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Overall impacts to socioeconomics under Alternative 1 are considered to be less than significant. Minor impacts are anticipated to economics and off-post housing while beneficial impacts are anticipated for on-post housing. There is the potential for schools to be impacted both adversely and beneficially. Other support services and facilities are anticipated to have negligible impacts.

Economic Impacts. Alternative 1 would result in the loss of up to 8,000 Army Soldier and government civilian employees, each with an average annual income of $41,830. In addition, this alternative would affect an estimated 4,464 spouses and 7,680 dependent children, for a total estimated potential impact to 12,144 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is 20,144.

Based on the EIFS analysis, there would be no significant impacts for sales volume, income, employment, or population. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.12-5, along with the estimated percentages for alternative 1. Table 4.12-6 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.12-5. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	8.95	9.02	2.56	2.36
Economic Contraction Significance Value	- 6.14	- 5.88	- 8.09	- 2.77
Forecast Value	- 2.61	- 1.37	- 3.19	- 1.92

Table 4.12-6. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- $528,553,900	- $403,002,900	- 8,786 (Direct) - 1,753 (Indirect) - 10,539 (Total)	- 20,144
Percent	- 2.61	- 1.37	- 3.19	- 1.92

The total annual loss in direct and indirect sales in the ROI represents an estimated -2.61 percent change from the total current sales volume of $20.25 billion within the ROI. It is estimated that state tax revenues would decrease by approximately $34.32 million as a result of the loss in revenue from sales reductions. Some counties within the ROI supplement the state sales tax of 6.5 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by 1.37 percent. While 8,000 Army Soldier and government civilian positions would be lost within the ROI, EIFS estimates another 786 military contract service jobs would be lost, and an additional 1,753 job losses would occur indirectly as a result of reduction in demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 10,539 jobs, or a -3.19 percent change in regional non-farm employment. The total number of employed positions (non-farm) in the ROI is estimated to be 330,035. A population reduction of -1.92 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 1.05 million people (including those residing on JBLM) that live within the ROI, 20,144 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes civilian and military employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.12-7 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.12-7. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Rational Threshold Value	Sales Volume	Income	Employment
Total	- $365,808,847 (Local) - $549,099,706 (State)	- $406,640,553	- 9,037 (Direct) - 1,152 (Indirect) - 10,189 (Total)
Percent	- 1.80	- 1.38	- 3.09

The total annual loss in direct and indirect sales in the region would represent an estimated -1.80 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 0.81 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately $35.7 million as a result of the loss in revenue from sales reductions, which would be $1.38 million more in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by 1.38 percent, slightly more than the 1.37 percent reduction projected by EIFS. While 8,000 Army Soldier and government civilian positions would be lost within the ROI, RECONS estimates another 9,037 military contract and service jobs would be lost, and an additional 1,152 job losses would occur indirectly as a result of reduced demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to

lead to a loss of 10,189 jobs, or a -3.09 percent change in regional non-farm employment, which would be 0.10 percentage points less than projected by the EIFS model.

When assessing the results together, both models predict similar economic impacts for the implementation of Alternative 1. Estimates from the models predict that Alternative 1 would lead to a net reduction of economic activity, with similar levels of impacts to non-farm employment (-3.09 and -3.19 percent) within the ROI.

Population and Demographics. JBLM anticipates a substantial reduction in military population and training throughput as a result of the implementation of Alternative 1.

Housing. Alternative 1 would increase the availability of barracks space for unaccompanied personnel, but some Soldiers would still be housed in barracks that fail to meet current Army standards due to the wide variety of barracks types currently spread throughout the different units' footprints on Lewis Main, Lewis North, and McChord Field. Alternative 1 would potentially increase the availability of Family housing units. Those outcomes would likely decrease the off-base demand for rentals and purchases of housing. JBLM anticipates some adverse effects to the rental housing markets in Olympia, Lacey, Yelm, DuPont, Lakewood, Puyallup, and Tacoma and in the smaller communities of the ROI, but it would not be a significant impact.

Schools. As a result of Alternative 1, reduction in student enrollment is expected to alleviate the overcrowding in ROI schools, which would be a beneficial impact. However, since school districts receive federal funding based on the installation's military authorizations and their dependents, an 8,000 Soldier and civilian reduction would be expected to have minor to less than significant impacts to school districts in the ROI. JBLM and DoD's Office of Economic Adjustment (OEA) have a plan to replace all five on-post elementary schools based on an age and condition study, and this plan is not expected to be changed under Alternative 1. Overall, impacts to schools are considered to be less than significant.

Public Health and Safety. As a result of Alternative 1, the anticipated population decrease at JBLM would likely reduce the demand for law enforcement services, fire and emergency services, and medical care services on and off post. JBLM anticipates negligible impacts to public health and safety under the Proposed Action.

Family Support Services. As a result of Alternative 1, JBLM anticipates a reduced demand for FMWR and Army Community Service programs on post, and a reduced demand for Family support services off post also. JBLM anticipates negligible impacts to Family support services under the Proposed Action.

Recreation Facilities. Use of recreation facilities on post would likely decline as a result of the implementation of Alternative 1. JBLM anticipates that utilization decreases would have negligible impacts, as demand for these resources already exceeds capacity in many cases.

Environmental Justice. As a result of the implementation of Alternative 1, JBLM anticipates no disproportionate adverse impact to minorities, economically disadvantaged populations, or children. Job losses would likely be felt across the ROI, affecting all income levels and many economic sectors.

4.12.10 Land Use Conflicts and Compatibility

4.12.10.1 Affected Environment

JBLM consists of approximately 91,000 acres of land. Areas on the installation are classified into residential, commercial, and industrial categories. Area development plans have been completed for 11 sites within the cantonment area of JBLM. The major areas for which area development plans have not been completed are training and impact areas.

4.12.10.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, no changes to land use conditions would occur. Activities and land use off-post under the No Action Alternative would continue to be compatible with existing and/or planned land uses within the ROI. Impacts would therefore be minor.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would result in a beneficial impact to the installation. This loss of troops would alleviate the need for additional Family housing over and above what is already planned for and is presently being built. The implementation of Alternative 1 would allow JBLM to selectively demolish outdated, less efficient facilities to open up land for construction or other best uses. A reduction in training land use would be anticipated that roughly correlates to a 20-30 percent decrease as a result of the implementation of Alternative 1. Land use would continue to be compatible with existing and/or planned land uses within the ROI.

4.12.11 Hazardous Materials and Hazardous Waste

4.12.11.1 Affected Environment

The affected environment for the Proposed Actions include the storage, transport, and disposal of hazardous materials and waste at JBLM. This includes hazardous materials and waste from USTs and ASTs, pesticides, LBP, asbestos, PCBs, radon, and UXO.

Units and activities on JBLM typically use hazardous materials such as fuels, paints, solvents, lubricants, coolants, and sanitation chemicals. Hazardous waste is generated as a result of facility and equipment maintenance, medical care activities, and Soldier training. JBLM operates as a large quantity hazardous waste generator. JBLM has several plans in place to help manage hazardous materials and waste including a Pollution Prevention Plan; Installation Spill Contingency Plan; SPCC Plan; and Pest Management Plan.

4.12.11.2 Environmental Consequences

No Action Alternative

Overall, it is anticipated that there would be minor impacts under the No Action Alternative. There would be no change in JBLM's management of hazardous materials, toxic substances, hazardous waste, or contaminated sites. JBLM would continue to manage existing sources of hazardous waste in accordance with the HWMP. Currently planned clean-up actions at JBLM would continue in an effort to restore areas contaminated by hazardous wastes.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have an overall anticipated less than significant impact to hazardous materials and waste. In the short term, if funding was available through the Facilities Reduction Program, there would likely be a spike in overall waste generation due to an increase in the demolition of outdated and no longer needed facilities, which would increase the volume of solid waste generated. In addition, an increase in asbestos containing materials and LBP disposal is anticipated until facility reduction is completed. Construction workers and Army personnel would take measures to dispose of materials in accordance with regulatory requirements and installation management plans. It is anticipated that JBLM would experience long-term beneficial impacts from a reduction in hazardous materials purchases, storage, and use; and the resulting hazardous waste generation, as a result of having up to 8,000 fewer Soldiers' vehicles, weapons, and other equipment that requires the presence of hazardous materials on the installation in the first place.

4.12.12 Traffic and Transportation

4.12.12.1 Affected Environment

The ROI for the affected environment for traffic and transportation aspects include areas of Pierce and Thurston counties, including the communities of DuPont, Lacey, Steilacoom, and Lakewood. Major routes in the region include I-5, a north-south interstate highway that separates Lewis North from Lewis Main and McChord Field. Other arterials used by JBLM personnel and connected to the Interstate are Washington State Routes 507, 510, and 512. Along with non-military related growth in the ROI over the last decade, JBLM traffic (military and civilian) negatively affects traffic flow on I-5 and LOS ratings at numerous intersections both on and off the installation.

4.12.12.2 Environmental Consequences

No Action Alternative

The 'Grow the Army' proposal determined that there would be significant impacts to traffic flows and increased delays at key intersections on and near JBLM. This impact may be reduced through the funding of road projects already planned but not yet funded. The No Action Alternative represents a significant impact to traffic and transportation at JBLM along the I-5 corridor (Fort Lewis, 2010).

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

There would be a beneficial impact to traffic from Alternative 1. The decrease in off-post traffic would have a slight beneficial impact on traffic in the community overall and could improve the LOS rating at intersections close to the installation, particularly during peak morning and afternoon travel periods where traffic is more congested. This level of decrease in population could also improve traffic flows on major roads travelling through the installation. As fewer Soldiers and their Family members commute to the installation, it is anticipated that traffic congestion would be diminished and travel time would decrease. Delays at key ACPs would also decrease. As traffic volumes decrease, LOS for on- and off-post commuters would improve. Therefore, under Alternative 1, the overall impacts to traffic will be beneficial.

4.12.13 Cumulative Effects

Region of Influence

The ROI for this cumulative impact analysis of Army 2020 realignment at JBLM encompasses two counties in Washington State: Pierce and Thurston. Tacoma in Pierce County and the three communities of Lacey, Olympia, and Tumwater in Thurston County are the largest cities within the ROI. Tacoma is the center for commercial manufacturing and transportation in the metropolitan area. JBLM has long been a key component of the economy of the metropolitan area, employing tens of thousands of Soldiers and civilian employees combined. For the purposes of this analysis, cumulative effects analysis considers reasonably foreseeable Army, DoD, and other federal agency actions that are funded and in the planning process for moving forward. This analysis also includes past or present projects not already included for consideration as part of the direct and indirect impact analysis. Reasonably foreseeable projects are considered those projects which are in the Army's Program Objective Memorandum encompassing FY 2013 to FY 2017 at JBLM.

There are numerous planned or proposed actions within the ROI that have the potential to cumulatively add impacts to Army 2020 alternatives. These actions are either in progress or reasonably could be initiated within the next 5 years. A number of the Army's proposed projects have been previously identified in the installation's Real Property Master Plan and are

programmed for future execution. The list below presents some of the projects which may add to the cumulative impacts of the implementation of Army 2020 realignment alternatives.

Joint Base Lewis-McChord Projects

- WWTP;
- BCT Complex Phase 3;
- BCT Complex Phase 4;
- BCT Complex Phase 5;
- Enlisted Unaccompanied Personnel Housing;
- Army Reserve Center;
- Aviation Unit Complex phases 2A, B, and C;
- Operational Readiness Training Complex Battalion phases 2 & 3;
- Corps Headquarters;
- Battle Command Training Center Upgrade; and
- U.S. Air Force Stationing at JBLM.

Other Agency (DoD and non-DoD) Actions (Past, Present, and Reasonably Foreseeable)

- Nisqually National Wildlife Refuge Comprehensive Conservation Plan. 2005;
- High Speed Rail Corridor (Vancouver, BC to Eugene, Oregon); and
- Planned expansion of Cal Portland's gravel mining operation, DuPont, Washington.

No significant adverse cumulative environmental impacts are anticipated when considering this Proposed Action in addition to other regional actions.

No Action Alternative

No significant adverse cumulative impacts are anticipated to occur when evaluating the implementation of the No Action Alternative in conjunction with the activities discussed above.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

When viewed in conjunction with other past, present, and reasonably foreseeable projects, the overall cumulative effects of Alternative 1 are projected to be either beneficial or less than significant adverse impacts for all VECs, except socioeconomics, which would be anticipated to have cumulatively minor adverse impacts.

The following VECs are expected to have cumulative beneficial impacts under Alternative 1: Air quality, noise, biological resources, water resources, energy demand and generation, facilities, land use conflict and compatibility, traffic and transportation. The loss of up to 8,000 Soldiers and civilians would have a beneficial cumulative impact to traffic both on and off JBLM. Alternative 1 would reduce the morning and evening traffic flow slowdowns on I-5 and should reduce waiting times for motorists at traffic signals. The implementation of high speed rail would also be anticipated to further reduce traffic levels within the ROI by eliminating the volume of POVs utilizing I-5 and other major roadways.

Socioeconomic impacts are anticipated to be cumulatively less than significant. County-wide, off-post unemployment has risen from 5.6 percent from March 2008 to 9.5 percent in March 2012 in Pierce County and 5.0 percent to 8.3 percent in Thurston County over the same timeframe (Employment Security Department, Washington State.) The force reduction proposed under Alternative 1 would further increase unemployment within the ROI, but not to significant levels.

There are currently no programmed U.S. Air Force force structure changes for JBLM that have been coordinated through JBLM Garrison. However, force reductions by the Air Force could intensify socioeconomic impacts of Army decisions to implement Alternative 1. Because of the large and diverse economy within the ROI that surrounds JBLM, cumulative socioeconomic impacts would still be projected to remain less than significant.

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4.13 FORT KNOX, KENTUCKY

4.13.1 Introduction

Fort Knox, located in northeastern Kentucky has approximately 46,000 acres of maneuver area suited for vehicle and non-vehicular military training (Figure 4.13-1). Until September 2011, it had been home to the Armor School and was primarily a training platform for armor/mechanized training. However, the Armor School relocated to Fort Benning, GA in 2011 to become part of the Army's MCoE.

Figure 4.13-1. Fort Knox

Fort Knox's major organizations are the U.S. Army Cadet Command, Human Resources Command, Army Recruiting Command, the 3rd Brigade of the 1st Infantry Division, the 3rd Expeditionary Sustainment Command and the 84th Training Command.

Fort Knox has a well-developed range infrastructure and maneuver area to support Soldier training, and is continuing to develop training range infrastructure to support its resident units.

4.13.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Knox does not anticipate any significant adverse environmental impacts as a result of the implementation of Alternative 1 (Force reduction of up to 3,800 Soldiers and Army Civilians) or Alternative 2 (Installation gain of up to 1,000 Soldiers). As a result of the implementation of Alternative 1, the Army does anticipate significant impacts to regional population, employment,

economic activity, and school systems. Table 4.13-1 summarizes the anticipated impacts to VECs from each alternative.

Table 4.13-1. Fort Knox Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 3,800	Alternative 2: Growth of up to 1,000
Air Quality	Minor	Beneficial	Minor
Airspace	Negligible	Negligible	Negligible
Cultural Resources	Negligible	Minor	Negligible
Noise	Negligible	Beneficial	Minor
Soil Erosion	Minor	Beneficial	Minor
Biological Resources	Negligible	Negligible	Negligible
Wetlands	Negligible	Negligible	Negligible
Water Resources	Minor	Beneficial	Minor
Facilities	Negligible	Minor	Less than Significant
Socioeconomics	Minor	Significant	Beneficial
Energy Demand and Generation	Negligible	Negligible	Negligible
Land Use Conflict and Compatibility	Negligible	Negligible	Minor
Hazardous Materials and Hazardous Waste	Negligible	Minor	Negligible
Traffic and Transportation	Negligible	Beneficial	Minor

4.13.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section, no more than a negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- ***Airspace*.** Fort Knox does not anticipate impacts to airspace under any of the alternatives. The use of airspace would not change significantly under Alternative 1 with the loss of ground units. Aviation and UAS would continue to require airspace to support training. This implementation of Alternative 1 would result in a slight and marginally lower utilization rate of existing military airspace as some units with UAS may be inactivated and no longer require activation and use of the airspace.

  The increased use of airspace would likely remain unchanged or could change with a negligible increase under Alternative 2. Additional airspace would not be required, and scheduling, activation, and utilization of existing military airspace (SUA) would proceed as it currently does without change.

- ***Biological Resources (Vegetation, Wildlife, Threatened and Endangered).*** There are 18 special status species of flora and fauna known to occur on Fort Knox; however, Fort Knox currently records only two federally endangered species, the Indiana bat (*Myotis sodalis*) and the gray bat (*Myotis griscescens*) as occurring on the installation.

There are also several Kentucky state-listed species and species of concern found on Fort Knox, though, as a federal installation management to protect these species is not required. The Fort Knox INRMP (Fort Knox, 2008a), prescribes a regime of ecosystem management that benefits all species, however. Tables 4.13-2 and 4.13-3 lists these species.

Table 4.13-2. Rare, Threatened, or Endangered Plants

Common Name	Scientific Name	Confirmed on Fort Knox	KSNPC Status
Butternut/White walnut	*Juglans cinerea*	Yes	S
Blue mud-plantain	*Heteranthera limosa*	Yes	S
Eggleston's violet	*Viola septemloba var. egglestonii*	Yes	S
Alleghany s*tonecrop*	*Sedum telephioides*	Yes	T
Compass plant	*Silphium laciniatum var. laciniatum*	Yes	T
Great plains ladies'-tresses	*Spiranthes magnicamporum*	Yes	T
Large sedge	*Carex gigantea*	Yes	T
Drooping bluegrass	*Poa saltuensis*	Yes	E
Tall beaked-rush	*Rhynchospora macrostachya*	Yes	E

KSNPC = Kentucky State Nature Preserve Commission Status Listing

Table 4.13-3. Rare, Threatened, or Endangered Animals

Common Name	Scientific Name	State Status	Federal Status
Gray bat	*Myotis grisescens*	Endangered	Endangered
Indiana bat	*M. sodalis*	Endangered	Endangered
Bald eagle	*Haliaeetus leucocephalus*	Threatened	—
Henslow's sparrow	*Ammodramus henslowii*	Special Concern Species	Species of Concern
Cerulean warbler	*Dendroica cerulea*	—	Species of Concern
Sharp-shinned hawk	*Accipiter striatus*	Special Concern Species	—
Northern cavefish	*Amblyopsis spelaea*	Special Concern Species	—
Cave crayfish	*Orconectes inermis*	Threatened	Species of Concern
Gray treefrog	*Hyla versicolor*	Special Concern Species	—

Negligible adverse effects would occur at Fort Knox under the No Action Alternative. Fort Knox would continue to adhere to its existing resource management plans and INRMP to further minimize and monitor any potential effects. Units are briefed prior to each training event regarding sensitive areas on post, such as protected species habitat, and what is and is not allowed within certain areas. During sensitive times of potential Indiana and Gray Bat breeding, training areas and activities are adjusted to limit disturbance. Negligible impacts to biological resources are anticipated as a result of the implementation of Alternative 1. Scheduling conflicts for training area access to conduct resource monitoring would be reduced. Proactive conservation management practices

and species monitoring would be more easily accomplished with reduced training. Negligible adverse impacts are anticipated as a result of the implementation of Alternative 2. The increase in the number of Soldiers is less than 15 percent above the current Soldier stationing levels. While this moderate force augmentation would increase traffic in the training lands and ranges, it would not cause significant degradation or destruction of threatened or endangered species or rare species habitats. Fort Knox has recently supported much higher levels of training and disturbance when it supported the Armor School, and biological impacts from an additional 1,000 Combat and support Soldiers as part of BCT restructuring would be anticipated to be negligible; however, access to training lands and ranges for the purpose of threatened and endangered species monitoring and habitat management would become more difficult with increased training.

Implementation of this level of Soldier strength would have a negligible impact on the two federally-listed species and other sensitive species of concern at Fort Knox. Sensitive species recorded on the installation would be managed in accordance with the installation's INRMP and ESMP, terms and conditions identified within biological opinion(s) issued by the USFWS and any conservation measures identified in ESA, Section 7 consultation documents.

- ***Wetlands.*** Negligible impacts to wetlands are anticipated as a result of all alternatives carried forward for consideration.
- ***Energy Demand and Generation.*** Negligible impacts would result from all alternatives. Regardless of the alternative selected, energy would be available to support Fort Knox operations without the need for additional power infrastructure.

Fort Knox anticipates that the implementation of any of the alternatives would result in negligible impacts for those VECs discussed above. The following provides a discussion of the VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Proposed Action alternatives.

4.13.2 Air Quality

4.13.2.1 Affected Environment

Fort Knox is located in the North Central AQCR and in the Kentucky portion of the southeast air quality transport zone. All construction or demolition associated with the cantonment area would be within Hardin County Attainment Zone. Ambient air quality at Fort Knox is in attainment for all criteria pollutants and within EPA's NAAQS guidelines for acceptable air quality.

Fort Knox holds a Title V operating permit. The permit covers all known point sources located at Fort Knox. Emission sources include storage and use of gasoline, distillate fuel, jet fuel (JP-8), paint booth operations, oil and gas fired boilers, and degreaser tanks. The permit requirements include an annual inventory update on each of these sources. No problems are anticipated in continuing to obtain air quality permits.

The Fort Knox cantonment area is not located in a nonattainment or maintenance area and is not subject to a conformity analysis; however, the "major source" designation does trigger the provisions of 40 CFR 52.21, PSD. The PSD provisions require Fort Knox to assess all new emission units to determine if their operation constitutes a major modification.

4.13.2.2 Environmental Consequences

No Action Alternative

Although there would continue to be minor short- and long-term fugitive dust and emissions impacts from training and installation operations, these impacts would not exceed threshold levels. Permit conditions would continue to be monitored and met, but no changes to emission sources are anticipated, other than those mandated by maintenance, replacement, or elimination of sources as they age or are removed from service.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

There would be a beneficial impact to regional air quality from reduced mobile source emissions. There would be less combustion and generation of NAAQS pollutants and HAPs associated with military training and few emissions from a smaller number of POVs. In addition, there would be less fugitive dust generated from fewer training events.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be a minor (low) impact on air quality in the airsheds surrounding Fort Knox as a result of implementing Alternative 2. There would be an anticipated minor increase in air emissions from both mobile and stationary sources that would be generated to support additional Soldiers and their Families. Though Fort Knox can anticipate increased emissions from military vehicles and generators used to support training events as well as increase in fugitive dust, the increase of up to 1,000 Soldiers would have only minor impacts to regional air quality. Fort Knox would not be anticipated to exceed the emissions limits of its Title V permit or to engage in activities causing any change in attainment status or exceedance of NAAQS. Activities that generate air emissions would not qualitatively change though they could be anticipated to increase marginally to support additional Soldiers.

4.13.3 Cultural Resources

4.13.3.1 Affected Environment

In relation to cultural resources, the footprint of Fort Knox defines the affected environment, or Area of Potential Effect. Fort Knox features a broad assortment of cultural resources. The Fort Knox Cantonment Historic District contains 182 buildings constructed during the 1930s and 1940s. Four other buildings, Cavalry Chapel, Hanger 1, Landing Ship Tank Building, and the Old Guest House are eligible for the NRHP. One property, a 1-mile segment of the Louisville and Nashville Turnpike (Bridges to the Past) is listed on the NRHP. A total of 948 archaeological sites have been identified at Fort Knox. Two of these are eligible for the NRHP and another 82 are potentially eligible.

These cultural resources are managed in accordance with the Fort Knox ICRMP, FY 2010 to FY 2014 (Fort Knox, 2010c). Guidance for managing historic buildings is specified in the Fort Knox Standards for the Treatment of Historic Buildings (Fort Knox, 2008b).

4.13.3.2 Environmental Consequences

No Action Alternative

Impacts to cultural resources from this alternative would be negligible. Activities with the potential to affect cultural resources are routinely monitored and regulated in accordance with the Fort Knox ICRMP, FY 2010 to FY 2014.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

Minor impacts are anticipated with this alternative at Fort Knox. Removal and release of temporary facilities would have low potential for adverse effects to historic buildings and/or archeological resources. Removal of outdated infrastructure has some potential to affect historic structures, but such actions to demolish older structures would be conducted in accordance with the Fort Knox ICRMP, FY 2010 to FY 2014. If the undertaking has the potential to adversely affect historic properties, consultation with the SHPO would occur per 36 CFR 800 as required. There is a low potential for any historic structures to be affected as a result of this action. If such an action is proposed, full consultation with the SHPO would occur.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

This level of growth on Fort Knox is anticipated to have a negligible impact to cultural resources. Measures are in place to accommodate training to prevent adverse impacts to cultural resources. The types of training conducted by the additional Soldiers would not change, though some training areas on Fort Knox might be used with marginally more frequency or intensity compared with current baseline conditions. The Fort Knox CRM would continue to follow the procedures outlined in the ICRMP in order to protect cultural resources.

No historic buildings would need to be demolished or reconfigured to accommodate more Soldiers under this alternative. The installation has facilities space and capacity to accommodate additional growth with limited new construction. Negligible impacts to cultural resources from construction would be anticipated.

4.13.4 Noise

4.13.4.1 Affected Environment

Noise, on and adjacent to Fort Knox, includes aircraft noise (from fixed- and rotary-winged aircraft) mainly from the Northern Training Area, of which weapons firing and maneuver on Wilcox Range also occurs. The Yano Multi-Purpose Tank Range has a NZ II, classified as normally incompatible, that extends beyond the installation boundary into an area that has some residential development (USACE, 2006). Other noise is from small caliber weapons training.

4.13.4.2 Environmental Consequences

No Action Alternative

Negligible impacts from noise are anticipated under the No Action Alternative. The acoustic environment of Fort Knox would continue to be effected by small- and large-caliber weaponry, artillery, and aircraft overflight. Other activities, such as ground maneuver training and exercises resulting in noise created by personnel and vehicles, would continue to contribute noise on and around Fort Knox, to the same levels and intensity as historically experienced.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

Impacts from noise are anticipated to be slightly beneficial. Existing ranges would still be utilized for firing the same types of weapons systems and conducting the same types of training; however, under this alternative, Fort Knox would have an anticipated reduction in the frequency of noise generating training events. The number of weapons qualifications and maneuver training events would be anticipated to decrease. Noise impacts would likely remain comparable to current conditions, though noise generating events would be less frequent leading to a reduced risk of noise complaints. The current frequency of aviation training activities, a contributor of noise at the installation, would not be anticipated to change more than marginally, as aviation units would not be impacted by these decisions.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be an anticipated minor impact on the installation and surrounding communities by the restationing of up to 1,000 Combat/Combat Support Soldiers. Noise modeling has indicated that the frequency of training and live-fire events would need to dramatically increase to result in a change in noise contours that would result in changes in noise contours that would affect sensitive receptor populations. Given that there are no new types of activities that would occur as a result of stationing of these Soldiers, just an increase in the types of existing noise generating activities, only minor impacts are anticipated to occur as a result of implementing this alternative. Sensitive wildlife populations would not be impacted by the implementation of Alternative 2.

4.13.5 Soil Erosion

4.13.5.1 Affected Environment

The major portion of Fort Knox is located on the eastern Pennyroyal Plateau, which has rolling to steep topography underlain by limestone and shale. There are three separate flats originating from the Ohio, Salt and Rolling Rock rivers. The latter two rivers run through Fort Knox and their floodplains are generally located in the range impact area. There are also numerous caverns and sinkholes on Fort Knox.

Most of the soils at Fort Knox are rated as having slight to moderate erosion limitations (U.S. Army, 1990). Heavy use of tracked vehicles in long-term training areas can result in extensive sheet erosion and severe gully erosion.

4.13.5.2 Environmental Consequences

No Action Alternative

Minor adverse impacts are anticipated under the No Action Alternative. Fort Knox would continue its infantry and mechanized training, that would continue to result in impacts to soils from removal of or damage to vegetation, digging activities, ground disturbance from vehicles, and ammunition or explosives used in training events. The installation's ITAM program conducts monitoring, rehabilitation, and maintenance/repair on areas of high use such as drop zones, artillery firing positions, observation points, and ranges to prevent extensive erosion and mitigate maneuver and live-fire impacts to soils.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

Impacts from soil erosion are anticipated to be negligible and potentially beneficial. Alternative 1 includes the reduction of no longer needed facilities that could result in short-term adverse impacts from demolition and temporary exposure of bare soils to rain and water and wind erosion; however, these impacts would be short term in duration. Overall, there would be anticipated beneficial long-term impacts from reduced training and more opportunities for land rehabilitation and natural rest and recovery of the landscape. It is anticipated that there would be less soil erosion and sedimentation attributable to training activities.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There are anticipated minor impacts to soil resources at Fort Knox resulting from the implementation of Alternative 2. Fort Knox, previously home of the Armor school until BRAC 2005 decisions realigned the school to Fort Benning, supported the mechanized training by more than 400 tanks and associated support vehicles. The impacts of IBCT training and an additional 1,000 Soldiers remain well under past soil disturbance regimes experienced at Fort

Knox. Additional Soldiers and training, however, would expose more soils that would become susceptible to erosion, and soil productivity (i.e., the capacity of the soil to produce vegetative biomass) may decline in disturbed areas. With the potential addition of another maneuver battalion, engineer units and other support units to a BCT, more vehicles would impact Fort Knox's training areas, though to a lesser extent than by comparison to recent historical training levels when the Armor school was stationed at Fort Knox. More vegetation would be denuded from the training areas by vehicular traffic and more bare soils would be exposed to water and wind erosion. A greater amount of sedimentation would be anticipated to occur in the regional surface waters. Fort Knox's ITAM program would continue to monitor training lands for disturbance, and would plan and implement rehabilitation and erosion control measures in areas of high use.

4.13.6 Water Resources

4.13.6.1 Affected Environment

Surface Water. Surface waters on Fort Knox include both streams and lakes. There are more than 25 water bodies that serve multiple purposes. In the vicinity of the cantonment area, there are several creeks and two ponds. Mill Creek, the nearest major body of water, is classified as "water quality limited" by Kentucky, due to metals, ammonia, and low dissolved oxygen concentrations.

***Water Supply*.** Potable water at Fort Knox is provided by two different sources: West Point Well Field in the Ohio River alluvial aquifer and surface water from McCracken Springs near Otter Creek. Groundwater used for the Fort Knox drinking water supply is from 15 deep wells.

Currently, Fort Knox owns and operates two drinking water plants. Ownership and operation of the drinking water treatment and supply system will be privatized on February 1, 2012. The Fort Knox Central Water Plant treats both groundwater and surface water while the Muldraugh Water Plant treats only groundwater. The two plants serve a daytime, on-installation population of approximately 26,000. Together, the plants treat an average of 3.065 mgd and are designed for a maximum capacity of 13 mgd. Treated water is supplied to the installation and sold to the City of Muldraugh and Hardin County Water District #1.

***Wastewater*.** The Fort Knox WWTP was designed for an average wastewater flow of 6 mgd, a maximum hydraulic capacity of 14 mgd, and a peak wastewater flow of 18 million gallons. The facility handles flow from the installation and the City of Muldraugh and treats an average domestic flow of about 2.5 mgd.

Ownership and operation of the Fort Knox wastewater system was transferred to Hardin County Water District No. 1 (District) in partnership with a private water utility contractor. The wastewater system at Fort Knox is generally adequate to convey and treat wastewater from all existing and future development.

***Stormwater*.** The Hardin County Water District also owns and operates the stormwater collection system at Fort Knox. The stormwater drainage system at Fort Knox is generally able to meet the demands of normal rainfall conditions.

Fort Knox has a permit that allows the installation to discharge stormwater from industrial areas and from construction activities disturbing more than 1 acre.

4.13.6.2 Environmental Consequences

No Action Alternative

The No Action Alternative would have minor adverse effects to water resources. No change from existing conditions would occur and all construction, operation, and maintenance projects already under way have obtained the NPDES permit and other applicable permits and are operating in adherence to their guidance. Training activities would continue, both on ranges and training lands, with adverse impacts mitigated via the ITAM land rehabilitation program.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

Minor beneficial impacts are anticipated as a result of the implementation of Alternative 1. A loss of up to 3,800 Soldiers and civilians would reduce training area use, and decrease the chance of potential surface water impacts. The demand for potable water would also be diminished, and implementation of Alternative 1 would create additional treated wastewater capacity for other uses at the installation.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Overall, minor impacts are anticipated as a result of the implementation of Alternative 2.

Surface Water. No new major construction would occur as a result of this alternative; however, an increase in training would require using existing road, trail, and training areas with greater intensity. This could lead to increased sedimentation and surface water impacts attributable to soils compaction, increased vegetation loss, and increased sheet flow during rain events. Any new construction/land disturbance over 1 acre would require a stormwater construction permit, which would entail identification and implementation of mitigation strategies to reduce impacts associated with stormwater runoff during and after construction.

Water Supply. Based on the average of 100 gpd of potable water use per person, it is anticipated that 1,000 additional Soldiers would increase potable water demand by approximately 100,000 gpd. This figure could be assumed to more than double to almost 250,000 gpd conservatively, if most Soldiers and dependents were assumed to live on post. The demand created by this increase in personnel is readily available and would not adversely impact Fort Knox's water supply. Fort Knox is currently using only a fraction of its potential water supply.

Wastewater Treatment. Based on an average daily use of 109 gpd per person, it is anticipated that wastewater would increase by 109,000 gpd for Soldiers, and potentially by up to 275,000 gpd when considering both Soldiers and their dependents, which well within the permitted limits and capacity of the WWTP.

4.13.7 Facilities

4.13.7.1 Affected Environment

Fort Knox is divided into two general areas: The cantonment area and the portions of the installation used as maneuver training facilities, ranges, and range impact areas. The cantonment occupies approximately 6,902 acres (approximately 6.3 percent) of the installation. Fort Knox's cantonment is the portion of the installation that has been developed into a variety of urban land uses that together comprise the elements necessary for a complete community. It includes but is not limited to, commercial and service support facilities similar to those associated with a civilian community. The commercial facilities include a commissary and Post Exchange that would make up the commercial aspects of a community center. The service support facilities include educational, post office, library, childcare center, youth center, and

chapel and religious education functions. The U.S. Bullion Depository is located at Fort Knox on a 30-acre tract of land completely surrounded by the installation. The Depository is a restricted area.

Within the cantonment area, a Wounded Warrior in Transition Complex is currently under construction and a new hospital complex is planned within the next 5 years. Fort Knox currently has a number of excess barracks and administrative facilities that can be used to support additional Soldier stationing. These facilities were vacated as part of the Armor school's BRAC directed move to Fort Benning, Georgia. Excess facilities include the 2300, 5900, 6000, and 6500 block barracks and administrative areas. All areas are readily available and require minimum investment to prepare them for re-purposing and reuse.

4.13.7.2 Environmental Consequences

No Action Alternative

Impacts to facilities would be negligible under the No Action Alternative. Fort Knox currently has an excess of facilities available to support its Soldiers, Families and missions. Facilities are available as a result of the departure of the Armor school to Fort Benning. The installation would continue to implement the Army's FRP at Fort Knox. Environmental analyses of the projects that result from these programs are conducted prior to implementation.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

Minor impacts are anticipated as a result of the implementation of Alternative 1. An increase in the FRP and facilities demolition at Fort Knox would occur as a result of this alternative. Older, less efficient facilities nearing the end of their life-cycle would be demolished when no longer needed to support Soldiers or their Families to save the Army on maintenance and energy requirements. Facility usage and availability for the remaining population would not be affected.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be less than significant impacts to facilities. A gain of up to 1,000 Soldiers would be reflected through increased usage throughout the cantonment area. Increased activities within the training and range areas would be anticipated to cause long-term facility impacts due to increased human presence. Given the existence of facilities readily available for use, negligible facilities impacts are anticipated from this alternative.

4.13.8 Socioeconomics

4.13.8.1 Affected Environment

The ROI consists of Hardin and Meade counties. The affected environment includes Fort Knox, surrounding communities, and Hardin and Meade counties. Fort Knox's population and workforce have long been an essential element of the demography and economy of the surrounding counties. The average income of personnel working at Fort Knox is approximately $41,830. The primary communities impacted on a daily basis by Fort Knox are Radcliff and Elizabethtown. Fort Knox is estimated to input more than $2.5 billion into the regional economy.

Population and Demographics. The Fort Knox population is measured in three different ways. The daily working population is 13,136, and consists of Soldiers and Army civilians working on post. The population that lives on Fort Knox consists of 4,221 Soldiers and 5,912 dependents, for a total of 10,133. Finally, the portion of the ROI population related to Fort Knox is 22,444 and consists of Soldiers, civilian employees, and their dependents living off post.

The ROI county population is approximately 135,000. This does not include the 10,133 residents of Fort Knox. Compared to 2000, the ROI's 2010 population increased in Hardin and Meade counties (Table 4.13-4). The racial and ethnic composition of the ROI is presented in Table 4.13-5.

The transient military and civilian workforce population supported by Fort Knox also directly impact the surrounding ROI and communities. These demographic areas may or may not reside on Fort Knox during their temporary stay based on barracks/housing availability and mission priorities/requirements. These transient groups generate demand for hotels, dining, and other supporting services both on and off the installation. In FY 2011, Fort Knox supported over 25,000 transient personnel and estimates that over 30,000 transient personnel will be supported in FY 2012.

Table 4.13-4. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Hardin	105,549	+ 12.1
Meade	28,601	+ 8.6

Table 4.13-5. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Kentucky	86	8	3	1	0	1	0
Hardin	78	11	<1	5	2	3	<1
Meade	91	3	<1	3	1	2	<1

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased in Hardin and Meade counties, but decreased overall in the State of Kentucky (Table 4.13-6). Employment, medium home value and household income, and poverty are presented in Table 4.13-6.

Table 4.13-6. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment	Employment 2000-2009 (Percent)	Medium Home Value 2005-2009 (Dollars)	Medium Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
Kentucky	1,486,545	- 1.80	113,100	40,061	18.40
Hardin	33,747	+ 3.20	126,600	45,358	14.70
Meade	3,270	+ 8.20	104,500	42,922	12.40

Fort Knox Family housing can currently accommodate 2,563 Families of the permanent party Soldier population with dependents who are assigned to Fort Knox. There are currently 2,419 Family housing units on Fort Knox which are managed through an RCI partnership that has been in place since 2006. At any given time, Fort Knox personnel occupy approximately 2,216 units in Family housing. As of July 2012, 2,326 military and 5,912 military dependents reside in Fort Knox Family housing. The number of dual military households living on post is currently 35. At this time, there is a waiting list for on-post housing that averages 45 days.

Family housing occupancy rates for 2010 and 2011 were 92.2 percent and 91.75 percent, respectively. Under the RCI phased construction program, 100 units are awaiting demolition, 88 of those units are currently vacant. New construction will include 434 new units with completion estimated no earlier than 18 months after all parties approve the plan and demolition is complete.

Unaccompanied Personnel Housing on Fort Knox has space for 11,016 unaccompanied personnel; 8,734 spaces reserved for transient personnel (students, trainees, and support cadre); 2,282 spaces for permanent party Soldiers, 491 spaces for the Wounded Warriors; and 168 spaces for geographical bachelors. The current permanent party occupancy rate is 71 percent.

Off-post housing consists predominately of single-family dwellings. The lack of new multi-family construction has placed pressure on this segment of the market. In 2000, approximately 17,300 single-family homes, or 12 percent of all occupied units in the ROI, were rental properties.

Schools. Fort Knox has approximately 2,200 students that attend DoD Education Activity schools on the installation. Off-post enrollment in districts around Fort Knox includes approximately 3,500 students. Student enrollment is 14,394 in Hardin County schools, 5,181 in Meade County schools, and 2,509 in Elizabethtown Independent schools. Table 4.13-7 shows the overall gain/loss projections of student dependents at Fort Knox and the surrounding ROI from 2006-2013.

Table 4.13-7. Soldier Dependents (School Aged)

Fiscal Year	Children (Total)	Infant and Pre-school	K-1	2-3	4-5	6-7	8-9	10-11	12	School age (Total)
07	283	105	35	32	30	27	23	18	13	178
08	43	16	5	5	5	4	3	3	2	27
09	889	333	113	102	96	85	73	57	40	566
10	-286	-148	-36	-32	-31	-27	-23	-18	-13	-180
11	-515	-191	-65	-58	-55	-49	-42	-32	-23	-324
12	3773	14	8	7	6	6	5	4	3	39
13	3566	1	1	0	0	0	0	0	0	1
Total Net Gain	7753	130	61	56	52	46	39	32	22	307

Public Health and Safety.

- **Police Services.** The Fort Knox Police Department oversees police operations, patrols, gate security, training, traffic accident, and criminal investigations.
- **Fire and Emergency Services.** The Fort Knox Fire Department responds to emergencies involving structures, facilities, transportation equipment, hazardous materials, and natural and man-made disasters, and directs fire prevention activities; and conducts public education programs.
- **Medical Facilities.** Fort Knox's on-post medical services are administered at Ireland Army Community Hospital. This facility services all permanent party, Active Duty personnel and their dependents, as well as retirees and their dependents.

Family Support Services. Fort Knox ACS is a human service organization with programs and services dedicated to assisting Soldiers and their Families under FMWR.

***Child, Youth and School Services*.** Fort Knox's Child, Youth & School Services is a division of FMWR. It provides facilities and care for children ages 6 weeks to 5 years; School Age Care for ages 6 to 10 years, a middle school and teen program for ages 11 to 18 years, as well as sports and instructional classes for children of Active Duty military, DoD civilian, and DoD contractor personnel. Children of retired military members are eligible to participate in the Middle School and Teen, Youth Sports and SKIES programs. Members of the local community can participate in the Youth Sports program. There were 2,594 Families, with 3,792 children registered for Fort Knox's child care, middle school, teen, sports, and SKIES programs in FY 2011.

Recreation and Leisure Program. Fort Knox has an award winning recreation and leisure program that offers its military community, Families, and civilians a Youth and adult Sports Complex, miniature golf course, auto crafts shop, outdoor water park, bowling center, 18-hole golf course, fitness centers, outdoor recreation opportunities, intramural sports program, entertainment and special events, Better Opportunity for Single Soldiers Program, leisure travel program, library and Java Café coffee shop, and a Sports Zone through FMWR.

4.13.8.2 Environmental Consequences

No Action Alternative

There would be no change or minor impacts anticipated from the No Action Alternative. This alternative is anticipated to provide a steady-state contribution of economic and social benefits and costs. No additional impacts to housing, public and social services, public schools, public safety, or recreational activities are anticipated.

Alternative 1: Force Reduction (up to 3,800[6] Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of approximately 3,800 military (uniformed Soldier and DoD civilian) positions, each with an average annual income of $41,830. In addition, this alternative would affect an estimated 2,142 spouses and 3,686 dependent children for a total estimated potential impact to 5,828 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 9,668. Based on the EIFS analysis, there would be no significant socioeconomic impacts to sales volume or income in the ROI for this alternative. There would be significant impacts for population and employment. The range of values that would represent a significant economic impact in accordance with the EIFS model are presented in Table 4.13-8. Table 4.13-9 presents the estimated economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

[6] Calculations used a number of 3,840 Soldiers and civilians for estimating socioeconomic impacts. This number was derived by assuming the loss of Fort Knox's IBCT, as well as 30 percent of the installation's non-BCT Soldiers and up to 15 percent of the civilian workforce. As discussed in Chapter 3, this number is rounded to the nearest hundred personnel when discussing impacts of Alternative 1.

Table 4.13-8. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	9.11	9.23	7.08	6.62
Economic Contraction Significance Value	- 7.48	- 6.42	- 6.99	- 4.53
Forecast Value	- 6.48	- 6.05	- 9.66	- 6.67

Table 4.13-9. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- $172,017,300	- $180,354,300	- 4,299 (Direct) - 547 (Indirect) - 4,846 (Total)	- 9,668
Percent	- 6.48 (Annual Sales)	- 6.05	- 9.66	- 6.67

The total annual loss in sales volume from direct and indirect sales reductions in the ROI represents an estimated -6.48 percent change in total sales volume from the current sales volume of $2.65 billion within the ROI. It is estimated that state tax revenues would decrease by approximately $10.32 million as a result of the loss in revenue from sales reductions. Some counties within the ROI supplement the state sales tax of 6 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by 6.05 percent. While approximately 3,800 direct military and government civilian positions would be lost within the ROI, EIFS estimates another 459 direct contract service jobs would be lost, and an additional 547 jobs losses would occur as a result of a reduction in demand for goods and services in the ROI as a result of the indirect impacts of force reduction. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 4,846 jobs, or a -9.66 percent change in regional employment. The total number of employed positions (military and private employment) in the ROI is estimated to be approximately 50,153. A significant population reduction of 6.67 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 144,200 people (including those residing on Fort Knox) that live within the ROI, 9,668 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This could lead to a decrease in demand for housing, and increased housing availability in the region. This would lead to a reduction in median home values. It should be noted that this estimate of population reduction includes civilian and military employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.13-10 below shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.13-10. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- $152,490,489 (Local) - $271,702,897 (State)	- $205,530,486	- 4,176 (Direct) - 417 (Indirect) - 4,592 (Total)
Percent	- 5.73	- 6.80	- 9.16

The total annual loss in sales volume from direct and indirect sales reductions in the region represents an estimated -5.73 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 0.75 percentage points less than estimated by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately $16.3 million as a result of the loss in revenue from sales reductions, which is $6.02 million more in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by 6.8 percent, slightly more than the 6.05 percent reduction projected by EIFS. While approximately 3,800 direct military and government civilian positions would be lost within the ROI, RECONS estimates another 336 direct contract and service jobs would be lost, and an additional 417 jobs losses would occur as from indirect reduction in demand for goods and services in the ROI as a result of force reduction. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 4,592 jobs, or a -9.16 percent change in regional employment, compared to the EIFS estimate of 9.66 percent.

When assessing the results together, both models seem to indicate that the economic impacts of the implementation of Alternative 1 would lead to a significant net reduction of economic activity within the ROI.

Housing. Alternative 1 would increase availability of barracks and single Soldier housing. If the number of permanent party Soldiers were reduced by up to 3,800 personnel on Fort Knox, there is a strong possibility that vacancies will occur in on-post Family housing. Once the Active Duty military waiting lists are empty, remaining units would be filled according to the cascading priority list outlined in Section 4.14.3.1. Fort Knox anticipates long-term major adverse impacts to the housing and rental market in the region. The Proposed Action would have the most impact in Hardin and Meade counties, as well as the cities of Elizabethtown and Radcliff where rental vacancy and current military tenant populations are highest

***Schools*.** Fort Knox anticipates the potential for significant adverse impacts to the Fort Knox DoD Education Activity, Hardin and Meade County public schools and Elizabethtown Independent Schools, that support on-post dependents a result of the implementation of Alternative 1. The listed school systems have invested heavily in infrastructure and staff as part of recent transformation and growth at Fort Knox. The loss of approximately 3,800 Soldiers and dependents will create excess capacity that would be unsupportable for the long term.

Public Health and Safety. As a result of the implementation of Alternative 1, resident and daytime population levels on Fort Knox would decrease and could potentially reduce demand on law enforcement, fire and emergency service providers, and on medical care providers on and off post. Active Duty military, remaining permanent party Soldiers, retirees, and their dependents, would continue to demand these services. Fort Knox anticipates less than significant impacts to public health and safety under the Proposed Action.

***Family Support Services*.** As a result of the implementation of Alternative 1, a reduction in permanent-party Soldiers could reduce demand on select Family support service providers on post. Active Duty military, remaining permanent party Soldiers, retirees, and their dependents would continue to demand child care and other ACS programs. Off-post Family support services throughout the region would likely experience a significant decrease in clients. Fort Knox anticipates less than significant impacts to Family support services on post under the Proposed Action.

Recreation Facilities. A reduction in permanent-party Soldiers could potentially decrease use of recreation facilities on post. Any decrease in utilization would be minor. Fort Knox does not anticipate significant adverse or beneficial impacts to recreation facilities under the Proposed Action.

Environmental Justice. As result of the implementation of Alternative 1, Fort Knox does not anticipate that a disproportionate adverse impact to minorities, economically disadvantaged populations, or children, would occur in the ROI. Fort Knox anticipates that job loss would be felt across economic sectors and at all income levels and spread geographically throughout the ROI. The proposed force reduction in military authorizations on Fort Knox would not have disproportionate or adverse health effects on low-income or minority populations in the ROI.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Economic Impacts. Alternative 2 would result in the gain of up to 1,000Soldiers, each with an average annual income of $41,830. In addition, this alternative would affect an estimated 558 spouses and 960 dependent children for a total estimated potential impact to 1,518 dependents. The total population increase of Soldiers and their dependents would be projected to be 2,518.

Based on the EIFS analysis, there would be no significant impacts for sales volume, income, population, and employment. The range of values is presented in Table 4.13-11. Table 4.13-12 presents the projected economic impacts to the region for Alternative 2.

Table 4.13-11. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 2

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	9.11	9.23	7.08	6.62
Economic Contraction Significance Value	- 7.48	- 6.42	- 6.99	- 4.53
Forecast Value	1.69	1.58	2.52	1.75

Table 4.13-12. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	$44,796,170	$46,967,250	1,120 (Direct) 142 (Indirect) 1,262 (Total)	2,518
Percent	1.69 (Annual Sales)	1.58	2.52	1.75

The total annual gain in sales volume from direct and indirect sales increases in the ROI would represent an estimated 1.69 percent gain in total sales volume from the current sales volume of $2.65 billion within the ROI. It is estimated that state tax revenues would increase by approximately $2.69 million as a result of the gain in revenue from sales increases. Some counties within the ROI supplement the state sales tax of 6 percent by varying percentages, and these additional local tax revenues would be gained at the county and local level. Regional income would increase by 1.58 percent. While 1,000 direct military and government civilian positions would be gained within the ROI, EIFS estimates another 120 direct contract service jobs would be gained, and an additional 142 jobs would be created from increased demand for goods and services in the ROI as a result of the indirect impacts of force increases. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 1,262 jobs, or a 2.52 percent change in regional employment. The total number of employed positions (military and private employment) in the ROI is estimated to be approximately 50,153. A population increase of 1.75 percent within the ROI is anticipated as a result of this alternative. Of the approximately 144,000 people (including those residing on Fort Knox) that live within the ROI, 2,518 military employees and their dependents would reside in the area following the implementation of Alternative 2. This would lead to an increase in demand for housing and decrease housing availability in the region. This could lead to a slight increase in median home values.

Table 4.13-13 shows the total projected economic impacts, based on the RECONS model, that would be estimated to occur as a result of the implementation of Alternative 2.

Table 4.13-13. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment
Total	$34,000,109 (Local) $60,580,356 (State)	$46,276,196	1,075 (Direct) 93 (Indirect) 1,168 (Total)
Percent	1.28	1.55	2.33

The total annual gain in sales volume from direct and indirect sales increases in the region would represent an estimated 1.28 percent change in total regional sales volume according to the RECONS model, an impact that is approximately .41 percentage points less than estimated by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would increase by approximately $3.64 million as a result of the gain in revenue from sales increases, which would be $950,000 more than the additional state sales tax revenue projected by the EIFS model. Regional income is projected by RECONS to increase by 1.55 percent, slightly less than the 1.58 percent increase forecasted by EIFS. While 1,000 direct military and government civilian positions would be gained within the ROI, RECONS estimates another 75 direct contract and service jobs would be gained, and an additional 93 jobs would be created from indirect increases in demand for goods and services in the ROI as a result of population increase. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 1,168 jobs, or a 2.33 percent change in regional employment; under EIFS, it is an estimated 2.52 percent.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 2 would lead to a net increase of economic activity within the ROI.

4.13.9 Land Use Conflicts and Compatibility

4.13.9.1 Affected Environment

Fort Knox occupies 108,955 acres, of which approximately 6,902 acres are the cantonment area. Land in the areas outside the cantonment area is used mainly for training, small arms and artillery impact, and vehicle uses. About 52,000 acres of land are under forest management. These lands are used as training grounds and buffer areas and for timber supply and recreation. Overall, the main land use at Fort Knox, occupying approximately two-thirds of the total acreage, consists of live-fire ranges and impact areas (U.S. Army, 1995).

4.13.9.2 Environmental Consequences

No Action Alternative

No changes to land use conditions would occur and no effects are anticipated under the No Action Alternative.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

No impacts are anticipated as a result of the implementation of Alternative 1. No changes to land use would be anticipated to occur through implementation of this alternative at Fort Knox. A reduction in training land use would be anticipated that roughly correlates with the number of Soldiers inactivated or realigned as a result of this alternative in comparison to those remaining at Fort Knox. The loss of approximately 3,800 Soldiers and Army civilians would not likely alter existing training lands or training facilities, but the loss would add significant strain to the installation to maintain these areas. Several BCT unique projects are programmed to support the current BCT mission.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be minor impacts, from land use conflicts and compatibility anticipated as a result of the implementation of Alternative 2. The gain of 1,000 additional Soldiers would require the additional use of training areas and qualification ranges. These uses may preclude the use of maneuver areas and require the need for increased management and balancing of training priorities.

4.13.10 Hazardous Materials and Hazardous Waste

4.13.10.1 Affected Environment

The affected environment for these Proposed Actions include the use, storage, transport, and disposal of hazardous materials and waste at Fort Knox. This includes hazardous materials and waste from USTs and ASTs, pesticides, LBP, asbestos, PCBs, radon, and UXO.

Fort Knox is a large quantity hazardous waste generator and has a RCRA Part B permit for a Treatment, Storage, and Disposal Facility. The types of wastes generated and stored at the installation include those found in maintenance activities, printing and painting operations, as well as electrical and mechanical shops. Approximately 90 percent of the waste solvents at Fort Knox are generated from vehicle and aircraft maintenance facilities. Many of the wastes received for disposal are expired commercial chemical products. All hazardous waste generated at Fort Knox is manifested under Fort Knox's EPA identification number (KY6210020479) (USACE, 2006).

4.13.10.2 Environmental Consequences

No Action Alternative

Overall, negligible effects are anticipated under the No Action Alternative. There would be no change in Fort Knox's management of hazardous materials, toxic substances, hazardous waste, or contaminated sites. Fort Knox would continue to manage existing sources of hazardous waste in accordance with the HWMP.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

Minor impacts are anticipated as a result of the implementation of Alternative 1. In the short term, there would be an increase in the demolition of outdated and no longer needed facilities. This would increase the volume of solid waste generated. In addition, an increase in asbestos and LBP disposal is anticipated until facility reduction is completed under this alternative. Construction workers and Army personnel would take measures to dispose materials in accordance with regulatory requirements installation management plans.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Negligible impacts from hazardous materials and waste would be anticipated with an increased Soldier strength of up to 1,000. The storage, use, handling, and disposal of hazardous materials, toxic substances, and hazardous wastes would not increase the risk to human health due to direct exposure, would not increase the risk of environmental contamination, and would not violate applicable federal, state, local, or DoD regulations. Existing management procedures, regulations, plans, and permits would be used to minimize risk.

4.13.11 Traffic and Transportation

4.13.11.1 Affected Environment

The affected environment or ROI for this Proposed Action includes Fort Knox and Hardin County, Kentucky. Within Hardin County, the areas most influenced by the proposed restationing of units to Fort Knox would be the Town of Radcliff and City of Elizabethtown. There are no commercial air carriers or waterway or maritime shipping at this installation. The installation has a railhead for rail movement of tactical vehicles.

The Army 2020 force initiative would not result in major increases in vehicle traffic volume either on the installation and in the local community leading to it. A large portion of the military and all of the civilians and contractors would continue to commute to Fort Knox by private automobile.

In conjunction with 2005 BRAC, the communities surrounding Fort Knox invested heavily in traffic improvements and mass transit systems. Fort Knox has completely redesigned the ingress and egress capability by improving capacity and throughput (by widening three gates and closing a fourth due to Anti-Terrorism/Force Protection concerns). In FY 2011, Fort Knox supported a weekday average inbound traffic flow of 31,000 vehicles (as compared to 46,000 in FY 2010) so capability exists to support a mission increase of up to 1,500 Soldiers and their Families. Additionally, the local communities invested approximately $250 million in state roadway to improve trafficability and access to and from Fort Knox (i.e., Elizabethtown/Radcliff Connector, Highway 313 expansion, and Highway 31W safety improvements). Fort Knox's mass transit program also provides service to approximately 500 personnel.

4.13.11.2 Environmental Consequences

No Action Alternative

Negligible impacts are anticipated under the No Action Alternative. Surveys and studies conducted on the existing transportation system determined that it is sufficient to support the current traffic load.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

This alternative would have minor beneficial traffic impacts resulting from a reduction in force at Fort Knox. It is anticipated that traffic congestion would be diminish in and around key ACPs and entrance gates. The roads would continue to be maintained and LOS for on- and off-post commuters would improve as traffic volume decreased. Fort Knox traffic system is providing decent LOS to meet the needs of its supported Soldiers, dependents and civilians.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be minor, short and long-term impacts on traffic and transportation systems on the installation due to the presence of an additional 1,000 Soldiers and their dependents. The increase in off-post traffic would have a minimal impact on traffic in the community overall. The implementation of this alternative would not contribute to a decrease in the LOS of the road network leading to the installation, particularly during peak morning and afternoon travel periods. This increase in population would also have a minor impact on the traffic volume on the installation on some of the installation's main and arterial routes. It should be noted that in 2010, average daily traffic was around 46,000 trips per day as opposed to 31,000 trips per day in 2011. The Fort Knox transportation system has the capacity to accommodate additional Soldier and dependent growth.

4.13.12 Cumulative Effects

Region of Influence

The ROI for this cumulative impact analysis of Army 2020 realignment includes Fort Knox, as well as Hardin and Meade counties in the State of Kentucky. Louisville, Kentucky is the largest city within the ROI. Louisville is the center for commercial manufacturing, transportation, and medical activities in the metropolitan area. Fort Knox has long been a key component of the economy of the metropolitan area, employing several thousand Soldiers and civilian employees within the ROI. Fort Knox has been in operation supporting the Army since 1918. For the purposes of this analysis, cumulative effects analysis considers reasonably foreseeable Army, DoD, and other federal agency actions that are funded and in the planning process for moving forward. This analysis also includes past or present projects not already included for consideration as part of the direct and indirect impact analysis. Reasonably foreseeable projects are considered those projects which are funded or zoned, and therefore there is high likelihood of project completion.

There are numerous planned or proposed actions within the ROI that have the potential to cumulatively add impacts to Army 2020 alternatives. These actions are either in progress or reasonably could be initiated within the next 5 years. A number of the Army's proposed projects have been previously identified in the installation's Real Property Master Planning Board and are programmed for future execution. A list of projects below presents some of the projects which may add to the cumulative impacts of the implementation of Army 2020 realignment alternatives.

Cumulative effects at Fort Knox include Army mission-related activities and potential land transfer activities. Actions considered for cumulative effects include:

Ongoing Projects:

- The Warrior in Transition Complex is currently under construction and will become operational in FY 2012.

Future Projects:

- New Hospital in FY 2013 to FY 2014;
- School Replacement and/or Consolidation Projects (4) in FY 2012 to FY 2015;
- Infantry Platoon Battle Course in FY 2012;
- Infantry Squad Battle Course in FY 2013;
- 19th Engineer Battalion Complex in FY 2012;
- Digital Air Ground Integration Range in FY 2016; and
- Multi Purpose Machine Gun Range in FY 2016.

Other Agency (DoD & non-DoD) Actions (Past, Present, and Reasonably Foreseeable Future)

- State Highway Project Connector from Veterans Memorial Pkwy to State Highway 313;
- State Highway Project Widening of State Highway Road 1600 through Elizabethtown; and
- Completion of State Highway 313 from State Highway 1500 to State Highway 448 in Brandenburg.

Fort Knox anticipates a range of cumulative effects resulting from the implementation of the Proposed Action and alternatives. Cumulative impacts for each alternative are as follows:

No Action Alternative

No adverse cumulative impacts would be anticipated under the No Action Alternative. Under the No Action Alternative, no changes in military authorizations, or local environmental conditions would be anticipated. Installation facility shortages and excesses would remain at their currently planned levels without additional stationing or force reductions. The Army would continue to implement some facilities reductions of outdated/unused facilities. Under the No Action Alternative, cumulative impacts to the following VECs would have no impact, or have a minor impact only and are not carried forward for detailed discussion in this section. These VECs are: air quality, airspace, cultural resources, noise, soil erosion, biological resources, wetlands, water resources, facilities, socioeconomics, energy demand and generation, land use conflict and compatibility, hazardous materials and hazardous waste, and traffic and transportation.

Alternative 1: Force Reduction (up to 3,800 Soldiers and Army Civilians)

Overall, as a result of the implementation of Alternative 1, cumulative adverse socioeconomic impacts would likely be long term and significant in nature. A significant adverse impact would be anticipated due to the decreased population and the resulting impacts to the local communities as Fort Knox is a leading employer within the region. The significant direct and indirect socioeconomic impacts, when considered in conjunction with the highway projects discussed above, would be anticipated to remain significant. Other than Fort Knox, there are limited employment options upon which the community can rely meaning that the job loss cannot be absorbed by other employment sectors such as the case in more urban areas. In

addition, adverse impacts to multiple regional community services and schools would be expected because they receive funding, support, time, donations, and tax revenue directly related to the number of military authorizations and their dependents.

The loss of the BCT would have minor beneficial impacts to air quality, soils, water quality, traffic, and biological resources.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There are no significant cumulative impacts anticipated as a result of the implementation of Alternative 2 at Fort Knox. Beneficial socioeconomic impacts are anticipated. The following VEC areas are anticipated to experience either no impact or minor cumulative impact as a result of the implementation of Alternative 2: air quality, airspace, cultural resources, noise, soil erosion, biological resources, wetlands, water resources, facilities, energy demand and generation, land use conflict and compatibility, hazardous materials and hazardous waste, and traffic and transportation.

4.14 FORT LEE, VIRGINIA

4.14.1 Introduction

Fort Lee provides logistics and support for Army operations world-wide. Fort Lee is the home of the Combined Arms Support Command, the Army Logistics University, the U.S. Army Quartermaster School, the U.S. Army Ordnance School, and the U.S. Army Transportation School. The USAG - Fort Lee, Virginia is under Installation Management Command Atlantic Region. Fort Lee is also home to the Defense Contract Management Agency, the consolidated headquarters of the Defense Commissary Agency, Kenner Army Health Clinic, the Military Entrance Processing Station and the 49th Quartermaster Group. The 49th Quartermaster Group is a FORSCOM unit, and the only Active-duty petroleum and water group headquarters. The 49th Quartermaster Group consists of a headquarters company and the 530th Combat Support Sustainment Battalion.

Fort Lee is located 25 miles south of Richmond, Virginia, in Prince George County. The installation is situated between the cities of Petersburg and Hopewell. Petersburg, Hopewell, and the City of Colonial Heights together constitute a minor metropolitan area encompassing Fort Lee known as the Tri-Cities. Fort Lee is situated on 5,678 acres and comprised of three distinct areas: the cantonment, the Range Complex (includes North Range), and the Ordnance Campus (Figure 4.14-1). Fort Lee's Range Complex supports live fire, maneuver area, and other specialized training. Fort Lee supports specialized field training in bulk petroleum supply in the cantonment area at the military in the Field training site and at the Petroleum Training Facility. Water purification training occurs in the cantonment area and at the Appomattox River Training site adjacent to the Range Complex.

In addition to training areas and ranges located on Fort Lee, two nearby military installations support the field training requirements for AIT students and permanent party military personnel to include units from the 49th Quartermaster Group. Fort A.P. Hill, located 70 miles north of Fort Lee, provides field training opportunities for Soldiers conducting force protection, patrolling, small arms firing, and military operations on urban terrain. Fort Pickett, located 45 miles to the southwest, accommodates the majority of weapons training required by permanent party military personnel.

The PEA analyzes the anticipated impacts of two alternatives on Fort Lee, the No Action Alternative and Alternative 1: (Force Reduction of up to 2,400 Soldiers and Army Civilians). Alternative 1 assumes a loss of 35 percent of the installation's Soldiers as well as a loss of up to 15 percent of the civilian employees. In addition, a 10 percent reduction in students and temporary trainees would be anticipated to occur as a result of the implementation of Alternative 1. If officials decide that the proposed reduction is in the best interest of the Army and the Nation after considering the impacts presented in this analysis, the reductions would be implemented before 2020. The second alternative is the No Action Alternative in which the Army implements currently programmed and authorized force structure decisions.

4.14.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Lee does not anticipate any significant adverse environmental or socioeconomic impact a result of the implementation of Alternative 1 (Force reduction of up to 2,400 Soldiers and Army Civilians) with the exception of a projected significant impact to socioeconomics attributable to a change in ROI population. Alternative 1 would result in minor decreases in the frequency of training activities performed at Fort Pickett and Fort A.P. Hill. Fort Lee anticipates beneficial or less than minor impacts to the environment on Fort A.P. Hill and Fort Pickett as a result of this

alternative; therefore, impacts to VECs are not carried forward for detailed analysis. Table 4.14-1 summarizes the anticipated impacts to VECs on Fort Lee for each alternative.

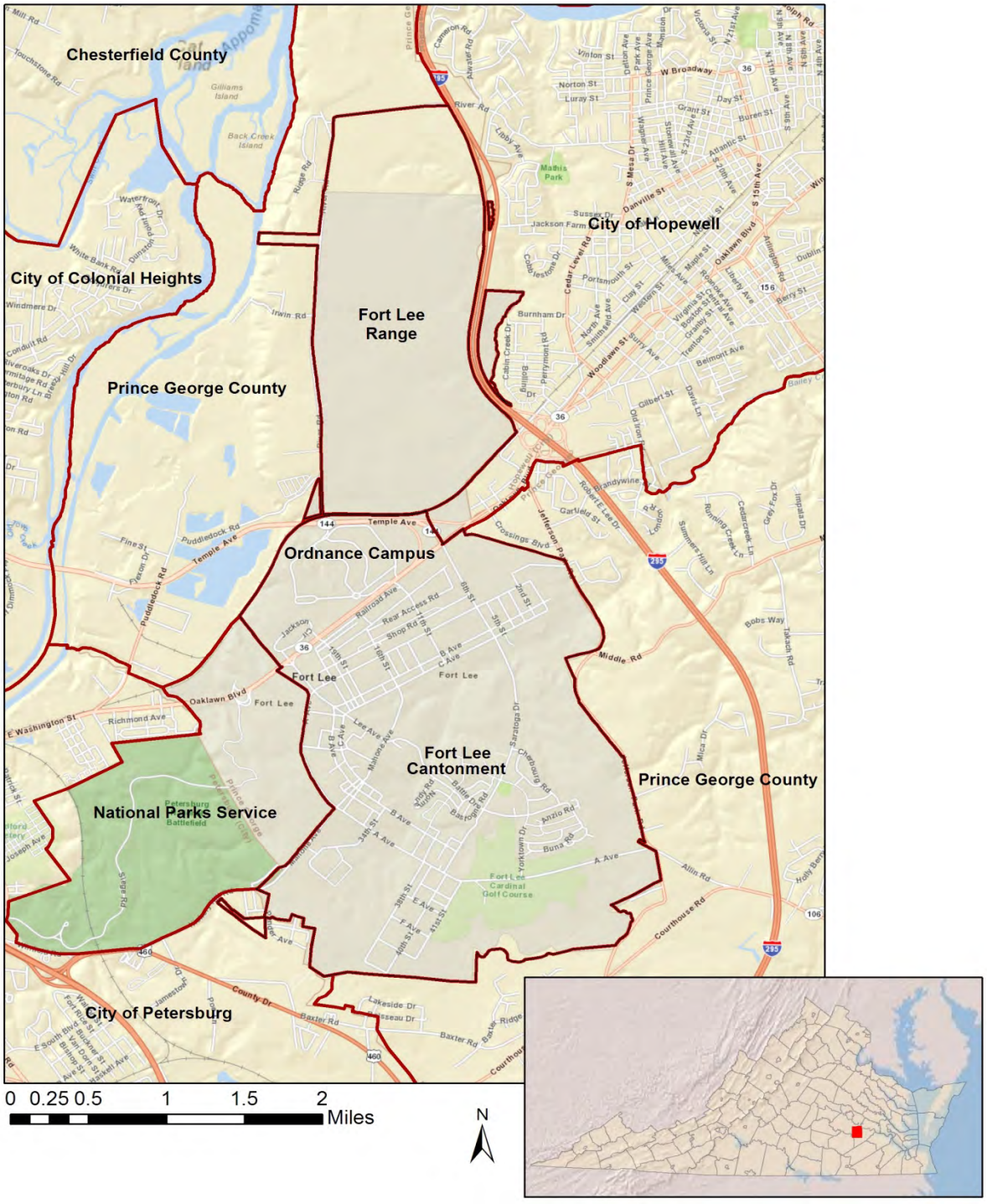

Figure 4.14-1. Fort Lee Installation Setting

Table 4.14-1. Fort Lee Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 2,400
Air Quality	Negligible	Beneficial
Airspace	Negligible	Negligible
Cultural Resources	Minor	Minor
Noise	Negligible	Beneficial
Soil Erosion	Negligible	Negligible
Biological Resources	Negligible	Negligible
Wetlands	Negligible	Negligible
Water Resources	Negligible	Negligible
Facilities	Negligible	Beneficial
Socioeconomics	Beneficial	Significant
Energy Demand and Generation	Negligible	Beneficial
Land Use Conflict and Compatibility	Negligible	Beneficial
Hazardous Materials and Hazardous Waste	Negligible	Minor
Traffic and Transportation	Negligible	Beneficial

4.14.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section, no more than a beneficial or negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- ***Air Quality.*** Fort Lee anticipates negligible impacts to air quality under No Action Alternative. Fort Lee anticipates long-term minor beneficial impacts to air quality as a result of implementation of Alternative 1. Emissions would decrease with the reduced use of: POVs; General Services Administration (GSA) vehicles; stationary sources (e.g., fuel combustion/fuel transfer, solvent/weapons cleaners); and fugitive emissions sources (e.g., paints, solvents, pavement). Decreased facility use would reduce the use of associated fuel burning equipment including boilers, hot water heaters, furnaces, and emergency generators. The risk of Fort Lee air permit violations is anticipated to be lower with implementation of the Proposed Action; however, the probability of a lower risk outcome would greatly depend on the adequacy of manpower resource support for those garrison organizations responsible for regulatory compliance with the CAA.
- ***Airspace.*** Fort Lee anticipates negligible impacts to installation airspace usage, operations, and/or utilization under either alternative. Fort Lee's Aerial Delivery and Field Services Department would continue to perform Sling Load and Low Cost Aerial Delivery System training with rotary-winged aircraft at the frequency specified in the Program of Instruction.

- ***Noise.*** Fort Lee anticipates negligible impacts to noise levels on and around Fort Lee under the No Action Alternative. Fort Lee anticipates beneficial impacts to noise levels on Fort Lee and in the surrounding area as a result of the implementation of Alternative 1. Decreased use of the Qualifications Training Range (under construction) and other live-fire ranges, and less frequent military vehicle operation would decrease the frequency and duration of noise generated on Fort Lee. Recreational use of Fort Lee's ranges and training land could increase or experience no change under Alternative 1. (see Land Use Conflicts and Compatibility discussion). It is unlikely that the frequency or duration of noise generated by Fort Lee would increase under either alternative. Any changes in frequency and duration of noise would be updated in Fort Lee's Noise Management Plan.
- ***Soil Erosion.*** Fort Lee anticipates negligible impacts to soil erosion as a result of the implementation of either alternative. Neither alternative involves activities or projects that would result in more than negligible impacts to soil resources. Decreased field training activity associated with Alternative 1 could reduce soil erosion in training areas and ranges. Removal of temporary structures could temporarily increase soil erosion from demolition activity; however, erosion and sediment controls including silt fencing and stormwater inlet protection would be implemented in accordance with Virginia Stormwater Regulations as outlined in the Virginia Department of Conservation and Recreation's Sediment and Erosion Control Handbook. The risk of soil loss and sediment discharge to surface waters would not increase under the No Action Alternative or Alternative 1.
- ***Biological Resources*****.** Fort Lee anticipates negligible impacts to vegetation or wildlife, including threatened or endangered species under either alternative. There are currently no listed threatened or endangered species on Fort Lee. A nesting pair of bald eagles was last seen on Fort Lee in 2005. As of 2011, there are no active bald eagle nests on Fort Lee and there is no statutory requirement to extend protection to historical nest sites. Fort Lee coordinates annually with the USFWS and complies with Fort Lee's INRMP. Fort Lee's Natural Resource Manager consulted with USFWS in March of 2012. There are no prime or statewide important farmlands on Fort Lee. No impacts would occur to the stretch of the Appomattox River 5 miles upstream from Fort Lee that is designated as a Virginia Scenic River. The risk of ESA or Sikes Act violations would not increase under the Proposed Action. Because Alternative 1 does not involve significant changes to the installation operations, it is anticipated to have only negligible or minor beneficial impacts to biological resources. There would not be a change in the types of activities conducted on Fort Lee, only a decrease in the frequency of training activities associated with the implementation of Alternative 1. The installation would continue to manage its natural resources and potential habitat in accordance with the installation INRMP and any conservation measures identified in any ESA, Section 7 consultation documents.
- ***Wetlands.*** Fort Lee anticipates negligible impacts to wetlands under either alternative. Facility demolition associated with the proposed downsizing could temporarily increase soil erosion and the risk of hydraulic fluid, oil or other small spills associated with construction equipment. Reduced vehicle traffic and training throughput on training areas and ranges could also reduce the risk of spills and soil erosion. Spill kits are required on Fort Lee construction sites and all spills must be handled according to Fort Lee's SPCC Plan. All wetlands and riparian resources on Fort Lee are protected by forested buffers and BMPs for erosion and sediment control. The risk of unpermitted discharges of sediments or other pollutants to wetlands would not increase and would likely decrease, under Alternative 1.

- ***Water Resources.*** Fort Lee anticipates negligible impacts to water resources or wastewater streams under either alternative. Given Fort Lee's current water demand and volume of wastewater generation, the proposed reduction of permanent party Soldiers would not have significant impacts to water demand or sewage volume. Fort Lee would contribute a smaller share of wastewater to Hopewell's Regional WWTP under the implementation of Alternative 1, which could impact operations at the facility. Demolition activities could temporarily increase stormwater runoff associated with ground disturbance while reducing impervious surfaces and preventing stormwater runoff over the long term. Less frequent field training activities would also decrease soil erosion and associated stormwater runoff. This decrease in stormwater runoff and soil erosion would decrease the risk of sediment pollution reaching surface waters. With current management practices it is unlikely that an unpermitted discharge of sediment into surface waters would occur under either the No Action Alternative or Alternative 1. Field training and construction/demolition activities follow BMPs and comply with associated permits on Fort Lee regardless of training throughput and permanent party population.
- ***Facilities.*** The cantonment area is the urbanized portion of Fort Lee, and has been developed into a wide variety of land uses necessary for a complete community. This includes a Post Exchange, commissary, housing and Family support services, medical, and mission-support facilities. Fort Lee anticipates negligible impact to facilities on post under the No Action Alternative. Fort Lee would continue to operate and maintain its existing facilities in accordance with current requirements. Alternative 1 would have a beneficial impact on facilities, allowing the release of temporary, relocate-able buildings and the demolition of some older, energy-inefficient buildings. Under the proposed force reduction, some permanent facilities may be re-designated to support units remaining at Fort Lee to provide more space and facilities that are better able to meet tenant and Army needs.
- ***Energy Demand and Generation.*** Utilities are connected across the cantonment area and along defined utility corridors and contribute collectively to the overall capacity, use, and storage as a unit. Electric lines also extend to North Range facilities. As such, the ROI for this resource is the North Range and cantonment area of Fort Lee. Dominion Virginia Power supplies electricity to Fort Lee. Fort Lee privatized the on-post electrical distribution system, now owned and operated by Dominion Virginia Power. Atmos Energy currently supplies natural gas to Fort Lee via infrastructure belonging to the state and to Columbia Gas of Virginia. Fort Lee owns the on-post natural gas distribution system. The North Range consumes a very small proportion of the electricity and natural gas supplied to Fort Lee.

  Fort Lee anticipates negligible impact to energy demand and generation under the No Action Alternative. Fort Lee would continue to draw the same amounts of energy from its utility provider with the same requirements for power and maintenance of power infrastructure. Fort Lee anticipates beneficial impact to the installation's energy resources under Alternative 1. Fort Lee anticipates reduced energy consumption would result from the proposed reduction, comparing the loss of approximately 2,400 Soldiers and Army civilians with Fort Lee's 2011 average daily population of approximately 22,000 personnel and trainees (ASIP, 2012). A reduction of this level represents more than 11 percent of the installation's total base population, which could lead to noticeable decreases in energy demanded by installation operations. Fort Lee's ongoing pursuit of energy efficiency and conservation measures would also contribute to reduced energy usage and demand under either alternative. The demolition of some less efficient buildings and winterization of vacant buildings would also reduce energy consumption associated with heating and cooling. Energy use could decrease by as much as 105

MMBtu per 1,000 square feet vacated. Overall, Alternative 1 would result in minor beneficial impacts to energy demand and generation.

- ***Land Use Conflicts and Compatibility.*** Fort Lee anticipates negligible impacts to land use conflicts and compatibility under the No Action Alternative. Fort Lee anticipates beneficial impacts to land use conflicts and compatibility as a result of the implementation of Alternative 1. Land use compatibility issues on Fort Lee are principally concerned with noise and light generated by training and recreational activities on post. Training frequency and trainee volume would decrease under the Proposed Action, which could allow more frequent recreational use of Fort Lee ranges through FMWR; however, demand for recreational activities on post could decrease under Alternative 1. It is unlikely that the frequency or duration of noise or light generated by Fort Lee would increase. Fort Lee does not anticipate increased risk of noise complaints or mission-community incompatibility under the Proposed Action.
- ***Traffic and Transportation*.** Fort Lee anticipates negligible impacts to traffic and transportation under the No Action Alternative. Fort Lee anticipates beneficial impacts to traffic and transportation as a result of the implementation of Alternative 1. Traffic volume on post would decrease due to the reduced number of government and POVs. Traffic volume in the local community would experience minor decreases, as fewer Soldiers and dependents would use regional transportation infrastructure. The current roadway network in and around Fort Lee is characterized by adequate levels of service with minimal congestion that is isolated to key areas during morning and afternoon peaks. The negligible impacts associated with regional transportation, should Alternative 1 be implemented, are a direct result of the overall adequacy of the regional roadway network capacity in and around Fort Lee.

Fort Lee anticipates that the implementation of any of the alternatives would result in negligible impacts for those VECs discussed above. The following provides a discussion of the VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Proposed Action alternatives.

4.14.2 Cultural Resources

4.14.2.1 Affected Environment

Fort Lee has undertaken 32 historic property inventories since 1982 covering both archaeological and architectural properties. Those inventories have resulted in the identification of a total of 119 archaeological sites. Subsequent evaluations have determined that 24 of these sites are significant enough to meet criteria establishing their eligibility to the NRHP. Architectural properties inventoried resulted in the identification of two historic properties eligible for list on the NRHP. Of these two buildings Fort Lee maintains responsibility for one structure, Building 4300, the Fort Lee Theater. The remaining structure, Building 3206, is part of a nationwide agreement between the DoD and the Advisory Council on Historic Preservation. Under this agreement the Army has met responsibilities of Section 106 of the NHPA. Ninety-five (95) of the remaining identified archaeological sites have been investigated further for their overall archaeological and historical significance and 9 still require additional evaluation (Wood, 2012).

4.14.2.2 Environmental Consequences

No Action Alternative

Impacts to cultural resources under the No Action Alternative would be minor. Activities with the potential to affect cultural resources are monitored and mitigated when anticipated through a variety of preventative and minimization measures.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

Fort Lee anticipates short-term minor adverse impacts to cultural resources from potential facilities demolition and long-term minor beneficial impacts to cultural resources from decreased field training activity. Less frequent field training could decrease the risk of inadvertent disturbance of artifacts and archaeological sites. Removal of outdated infrastructure has very low potential to affect historic structures on Fort Lee while associated ground disturbance could increase the risk of inadvertent disturbance of artifacts and archaeological sites. Any ground disturbing activity or actions that could impact unique or potentially eligible historic structures would undergo full consultation with the SHPO as required per 36 CFR 800. The risk of NHPA, ARPA, and NAGPRA violations would not increase under the Proposed Action. Any impacts to cultural resources under the Proposed Action would be minor.

4.14.3 Socioeconomics

4.14.3.1 Affected Environment

Fort Lee is located in the south-central part of Virginia. The ROI consists of Chesterfield, Dinwiddie, and Prince George counties, and the cities of Colonial Heights, Hopewell, and Petersburg.

Population and Demographics. The Fort Lee population is measured in three different ways. The daily working population is 6,726, and consists of full-time permanent party Soldiers and Army civilians working on post. The population that lives on Fort Lee consists of 1,786 permanent party Soldiers and 4,382 dependents, for a total on-post resident population of 6,168. This does not include temporary trainees and students, which add substantially to the Fort Lee resident on-post population. Finally, the portion of the ROI population related to Fort Lee is 11,814 and consists of Soldiers, civilian employees, and their dependents living off post.

The ROI population is approximately 450,000. Compared to 2000, the 2010 population increased in Chesterfield, Dinwiddie, and Prince George counties, and the cities of Hopewell and Colonial Heights. Population decreased in the City of Petersburg since 2000 (Table 4.14-2). The racial and ethnic composition of the ROI is presented in Table 4.14-3.

Table 4.14-2. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Chesterfield	315,000	+ 21.7
Dinwiddie	28,000	+ 14.1
Prince George	35,000	+ 8.1
City of Hopewell	22,600	+ 1.10
City of Colonial Heights	17,400	+ 3.00
City of Petersburg	32,400	- 3.90

Table 4.14-3. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Virginia	68	19	0	8	5	2	0
Chesterfield	65	22	0	7	3	2	0
Dinwiddie	63	33	0	2	0	1	0
Prince George	58	31	1	6	1	2	0
City of Hopewell	53	36	0	7	1	3	0
City of Colonial Heights	81	10	0	4	3	2	0
City of Petersburg	15	78	0	4	1	2	0

Permanent party Soldiers and full-time civilians generate demand for housing, enroll their children in local schools, and require municipal services like other households in the region. Temporary duty (TDY) personnel and transient military and civilian populations generate increased demand for lodging, dining, and retail services in the area.

AIT students impact the community differently as they are housed on post for 4 to 33 weeks depending on Military Occupational Specialty and are seldom given off-post leave. Fort Lee graduated 30,977 AIT students in 2011 and currently has an average AIT population of more than 7,000. AIT students also generate demand for hotels and dining regionally as their Families travel to Fort Lee for graduation ceremonies. Fort Lee graduated 30,977 AIT students in 2011 and estimates more than 40,000 students will graduate from AIT in 2012 (Fort Lee PAID, 2012).

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased in the Commonwealth of Virginia and Chesterfield and Prince George counties and decreased in Dinwiddie County (Table 4.14-4). Employment, median home and household income, and poverty level are presented in Table 4.14-4.

Table 4.14-4. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
Virginia	3,061,186	+ 5.4	$247,100	$59,372	10.60
Chesterfield	100,727	+ 23.00	$225,400	$70,055	6.00
Dinwiddie	4,454	- 8.3	$163,800	$51,459	11.80
Prince George	5,952	+35.3	$196,300	$59,349	10.20
City of Hopewell	8,742[1]	NA[2]	$130,700	$37,789	20.40
City of Colonial Heights	8,071[1]	NA[2]	$187,700	$50,571	7.5
City of Petersburg	12,962[1]	NA[2]	$115,900	$36,449	20.20

[1]Non-farm employment derived from 2006-2010 American Community Survey 5-Year Estimates.
[2]Employment change is not available for cities in 2006-2010 American Community Survey 5-Year Estimates.

Fort Lee Family housing can accommodate roughly 30 percent of the 2011 permanent party Soldier population with dependents who are assigned to Fort Lee. There are currently 1,505 Family housing units on Fort Lee which are managed through an RCI partnership that has been in place since 2007. At any given time, Fort Lee personnel occupy approximately 1,420 units in Family housing. Approximately 4,400 dependents currently reside on post (Hunter, 2012). The number of dual military households living on-post is unknown. Eighty-one Families were on the waiting list for on-post housing in July 2012. Housing units are filled by the priority listed below:

- Key and Essential personnel;
- Active duty military and Reserve or National Guard under certain conditions;
- Unaccompanied Active duty military under certain conditions;
- Unaccompanied Families of Active duty personnel;
- Retired military personnel and DoD civilians; and
- Civilians (non-military personnel, non-DoD personnel).

Family housing occupancy rates for 2010 and 2011 were 95.84 percent and 94.15 percent, respectively. Under RCI Phase IV construction, 90 units are awaiting demolition, 76 of those units are currently vacant. Construction will include 93 new units with completion estimated no earlier than 18 months after all parties approve the plan and demolition is complete (Hunter, May 2012).

Unaccompanied Personnel Housing on Fort Lee has non-surge barracks space (90 square feet per Soldier) for 9,231 unaccompanied personnel; with 8,339 of those beds reserved for AITs. The remaining barracks space (892 beds) is reserved for permanent party Soldiers; with a permanent party occupancy rate of 36 percent (Boling, 2012; Royster, 2012).

Off-post housing consists predominately of single-family dwellings. The lack of new multi-family construction has placed pressure on this segment of the market. In 2000, approximately 17,300 single-family homes, or 12 percent of all occupied units, were supporting rental demand in the ROI (Fort Lee, 2008). Table 4.14-5 illustrates the percentage of military, civilian, and contractor personnel residing in different localities within the ROI and Table 4.14.6 provides the 2010 housing statistics.

Table 4.14-5. Residence of Fort Lee Personnel; 2006 and 2009 Survey Respondents

	Military (Percent)		Civilian (Percent)		Contractor (Percent)	
	2006	**2009**	**2006**	**2009**	**2006**	**2009**
Fort Lee	34.8	22.8	0.9	1.1	2.2	2.1
Petersburg	11.8	8.3	9.3	7.4	6.8	7.9
Hopewell	7.3	6.1	5.6	5.8	8.7	8.4
Colonial Heights	7.5	6.1	8.7	7.3	9.5	9.4
Prince George	9.7	12.7	20.0	21.6	20.1	19.4
Dinwiddie County	3.7	5.7	7.6	8.3	6.5	4.2
Chester or Chesterfield County	19.0	32.5	34.0	32.9	27.4	34.0
Other	6.2	5.7	13.8	15.6	19.0	14.7

Source: Fort Lee, 2010b

Table 4.14-6. 2010 Housing Statistics

	Number of Housing Units	Rental Vacancy (Percent)	Homeowner Vacancy (Percent)
Fort Lee	1,323	4.2	n/a
Petersburg	16,326	12.6	4.4
Hopewell	10,121	9.0	3.8
Colonial Heights	7,381	8.0	2.6
Prince George County	12,056	7.2	1.4
Dinwiddie County	11,422	8.3	1.4
Chesterfield County	122,555	10.1	1.9

Source: U.S. Census, 2010; Hunter, 2012

***Schools*.** The school-age population associated with Fort Lee is in constant flux as PCS military students often enroll dependents in local schools during their six-month tours on Fort Lee. Table 4.14-7 presents the number of military-connected children that local schools reported in a survey conducted for Child Youth and School Services (CYSS) in November of 2011. According to the survey, more than 5 percent of school children in the ROI are military-connected. This is likely an underestimate considering non-response error in the survey. Permanent party Soldiers living off post with their dependents contribute an estimated 2,211 school-age children to the public schools in Chesterfield County, Dinwiddie County, Hopewell, Petersburg and Colonial Heights. School-age dependants of permanent party Soldiers living on-post attend Prince George County Public Schools. Prince George County Schools receive significant federal and DoD funding based on the number of military dependents they support annually. Prince George County received $3,550,000 in Federal School Impact Aid and $420,000 in DoD funds for the 2011-2012 school year. Prince George was also awarded more than $1 million in grants with the intent of increasing academic achievement of military students in math, science, engineering, and technology. Funding for two of these three active grants is based on military students' achievement on the Virginia Standards of Learning (SOL) Tests. Table 4.14-7 presents school capacity data for 2008 (Fort Lee, 2008).

Table 4.14-7. School Capacity 2008

	Elementary	Middle	High School
Chesterfield County	-702	1,091	-177
Dinwiddie County	33	-210	-180
Prince George County	-186	457	-15
City of Hopewell	70	101	207
City of Petersburg	-71	606	79
City of Colonial Heights	-9	0	0

Source: Fort Lee, 2008.
Positive values indicate surplus capacity.

Public Health and Safety.

Police Services. The Fort Lee Police Department oversees police operations, patrols, gate security, training, traffic accident, and criminal investigations.

Fire and Emergency Services. The Fort Lee Fire Department responds to emergencies involving structures, facilities, transportation equipment, hazardous materials, and natural and man-made disasters, and directs fire prevention activities; and conducts public education programs. The Fort Lee Fire and Emergency Services Division has mutual aid agreements with Prince George and Dinwiddie counties and the cities of Colonial Heights, Hopewell, and Petersburg. City, county, and state police departments provide law enforcement in the ROI.

Medical Facilities. Fort Lee's on-post medical services are administered at the Kenner Army Health Clinic. This facility services all permanent party, Active duty personnel and their dependents, as well as retirees and their dependents, within a 20-mile radius of the post. Kenner Army Health Clinic also services AIT students training on-post, mostly at the two Troop Medical Clinics located in the training brigade areas of operation.

The Kenner Army Health Clinic functions as an outpatient treatment facility only. Acute care, specialty services, and long-term medical needs for military Families enrolled in the clinic's health care network are referred to off-post civilian and/or military hospitals and practitioners. Primary demand for off-post medical services related to Fort Lee personnel is focused in the areas of emergency/urgent care, orthopedics, behavioral health, obstetrics, and dermatology (Fort Lee, 2008).

Family Support Services. Fort Lee ACS is a human service organization with programs and services dedicated to assisting Soldiers and their Families under FMWR. Fort Lee's Child, Youth & School Services is a division of FMWR. It provides facilities and care for children ages 6 weeks to 5 years; School Age Care for ages 6 to 10 years, a middle school and teen program for ages 11 to 18 years, as well as sports and instructional classes for children of Active Duty military, DoD Civilian, and DoD contractor personnel. Children of retired military members are eligible to participate in the Middle School and Teen, Youth Sports and SKIES programs. Members of the local community can participate in the Youth Sports program. Fort Lee's Child, Youth & School Services programs frequently experience high turnover rates due to demographics associated with PCS status military students attending the Army Logistics University for short, 6-month tours (Fort Lee's Child, Youth, and School Services Division, 2012).

The Virginia Department of Social Services, which operates across the county, and local cities' social service departments provide assistance to all Virginia residents, including Active Duty military personnel and their Families stationed on Fort Lee. Virginia Department of Social Service programs include adult and child protective services, child care, adult day care, assisted living facilities, financial assistance, food stamps, low-income energy assistance, and support for adults and children with special health care needs or disabilities, domestic violence, and substance abuse counseling.

Recreation Facilities. Fort Lee offers its military community, Families, and civilians batting cages, Frisbee golf, a skate park, auto crafts shop, outdoor swimming pool, bowling center, 27-hole golf course, fitness centers, outdoor recreation opportunities, sports teams, and a Sports Zone through FMWR.

4.14.3.2 Environmental Consequences

No Action Alternative

Fort Lee anticipates beneficial socioeconomic impacts if the No Action Alternative is implemented. Fort Lee anticipates that the No Action Alternative would provide a steady-state contribution of economic and social benefits and costs. No adverse impacts to housing, public and social services, public schools, public safety, or recreational activities would be anticipated. Fort Lee would continue to receive community services and contribute to the tax base of the local economy. Fort Lee's continuing operations would represent a beneficial source of regional economic activity.

Alternative 1: Force Reduction (up to 2,400[7] Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of approximately 2,400 military employees (Soldiers and Army civilian employees), each with an average annual income of $41,830. In addition, this alternative would affect an estimated 1,357 spouses and 2,334 dependent children, for a total estimated potential impact to 3,691 dependents. The total population of military employees and their dependents directly affected by Alternative 1 would be 6,123.

Based on the EIFS analysis, there would be no significant impacts for sales volume, income, or employment. There would be significant impacts for population. The range of values that represents a significant economic impact in accordance with the EIFS model is presented in Table 4.14-8, along with the predicted percentages for Alternative 1. Table 4.14-9 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.14-8. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Regional Threshold Value	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Positive	12.76	12.40	3.24	3.36
Negative	-8.35	-6.17	-7.97	-0.96
Forecast Value	- 1.57	-1.48	- 2.22	-1.36

Table 4.14-9. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- $143,266,914	- $132,684,760	- 2,691 (Direct) - 481 (Indirect) - 3,172 (Total)	- 6,123
Percent	- 1.57	- 1.48	- 2.22	- 1.36

The total annual loss in direct and indirect sales in the ROI represents an estimated -1.57 percent reduction. State tax revenues would decrease by approximately $5.73 million as a result

[7] Calculations used a number of 2,432 Soldiers and civilians for estimating socioeconomic impacts. This number was derived by assuming the loss of 35 percent of Fort Lee's Soldiers and up to 15 percent of the civilian workforce. As discussed in Chapter 3, this number is rounded to the nearest hundred personnel when discussing impacts of Alternative 1.

of the decreased sales. Some counties within the ROI supplement the state sales tax of 4 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by an estimated 1.48 percent. While approximately 2,400 Soldier and Army civilian positions would be lost within the ROI, EIFS estimates another 259 military contract service jobs would be lost as a result of the implementation of Alternative 1, and an additional 481 job losses would occur indirectly as a result of reduced demand for goods and services in the ROI. The total reduction in demand for goods and services within the ROI is projected to lead to a loss of 3,172 non-farm jobs, or a -2.22 percent change in regional non-farm employment. The total number of employed positions (non-farm) in the ROI is estimated to be 142,694. A significant population reduction of 1.36 percent within the ROI is anticipated as a result of this alternative. Of the approximately 450,000 people (including those residing on Fort Lee) that live within the ROI, 6,123 military employees and their dependents would be projected to no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. It should be noted that this estimate of population reduction includes Army civilian and military members and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.14-10 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.14-10. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Rational Threshold Value	Sales Volume	Income	Employment
Total	- $83,587,518 (Local) - $166,926,376 (State)	- $112,661,343	- 2,616 (Direct) - 228 (Indirect) - 2,844 (Total)
Percent	- 0.91	- 1.26	- 1.99

The total annual loss in direct and indirect sales in the region represents an estimated -0.91 percent change in total regional sales volume according to the RECONS model, an impact that is 0.66 percentage points lower than the reduction projected by EIFS; however, gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, state tax revenues would decrease by approximately $6.67 million as a result of the loss in revenue from sales reductions, which would be $2.87 million more in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by -1.26 percent, which would be more than the 1.48 percent reduction projected by EIFS. While approximately 2,400 direct Soldier and Army civilian employee positions would be lost on the installation, RECONS estimates 184 military service contract jobs would be lost within the ROI, and an additional 228 job losses would occur indirectly as a result of reduced demand for goods and services in the ROI. The total estimated reduction in non-farm employment in the ROI is anticipated to be -2,844 jobs, or a -1.99 percent change in regional non-farm employment, which would be 0.23 percentage points lower than projected by the EIFS model.

When assessing the results together, both models predict that the economic impacts of the implementation of Alternative 1 would lead to an overall reduction of economic activity within the ROI of a similar order of magnitude.

Housing. Alternative 1 would increase availability of single occupancy barracks and single Soldier housing. If the Army reduced the number of permanent party Soldiers by 35 percent on Fort Lee, there is a possibility that vacancies could occur in on-post Family housing. The waiting list for on-post Family housing was 81 Families long in July 2012 (Hunter, 2012). Once the Active Duty military waiting lists are empty, remaining units would be filled according to the cascading priority list outlined in Section 4.14.3.1 (Hunter, 2012). Fort Lee anticipates long-term minor adverse impacts to the housing and rental market in the region.

***Schools*.** Fort Lee anticipates that Alternative 1 would result in less than significant impacts to school funding and operations in the region as a whole. With the exception of Prince George County, the proposed reduction would not affect any school district in the ROI seriously, as decreases in enrollment would be small relative to total student population (Table 4.14-8). Fort Lee anticipates the potential for significant impacts to Prince George County Public Schools that support on-post dependent children as a result of the implementation of Alternative 1. Prince George receives significant federal and DoD funding (Federal School Impact Aid and grants) based on the number of military-connected children it supports. As a result of the implementation of Alternative 1, occupancy rates could drop in on-post Family housing and housing units would be filled based on the cascading priorities list. Personnel considered eligible based on the cascading priorities list may contribute fewer military-connected children to Prince George schools than permanent party military. This would decrease Federal School Impact Aid and select federal funding paid to Prince George schools. According to data from the Fort Lee Growth Management Plan (Table 4.14-7), Prince George Elementary and High schools were over capacity in 2008, so a reduction in military children attending Prince George schools could also have a beneficial impact by reducing overcrowding in the school system. The net impact of Alternative 1 on Prince George County public schools would depend on the number of remaining permanent party Soldiers eligible to live on-post; how many of those eligible Soldiers would choose to live on-post; and how many dependent children each Soldier would have. Prince George County public schools could experience negligible to significant net impacts to funding and operations, but the severity of impacts cannot be determined without knowledge of Soldier Family structure, preference, and eligibility for on-post housing. Across the ROI, Fort Lee anticipates less than significant impacts to school funding and operations.

Public Health and Safety. As a result of the implementation of Alternative 1, resident and daytime population levels on Fort Lee would decrease and could potentially reduce demand on law enforcement, fire and emergency service providers, and on medical care providers on and off post. AIT Soldiers, Active Duty military, remaining permanent party Soldiers, retirees, and their dependents, would continue to demand these services. Fort Lee anticipates less than significant impacts to public health and safety under Alternative 1.

***Family Support Services*.** As a result of the implementation of Alternative 1, a reduction in permanent-party Soldiers could reduce demand on select Family support service providers on post. AIT Soldiers, Active Duty military, remaining permanent party Soldiers, retirees and their dependents would continue to demand child care and other ACS programs. Off-post Family support services throughout the region would not likely experience a significant decrease in clients. Fort Lee anticipates less than significant impacts to Family support services under Alternative 1.

Recreation Facilities. A reduction in permanent-party Soldiers could potentially decrease use of recreation facilities on post. Any decrease in utilization would be minor. Fort Lee does not

anticipate significant impacts to recreation facilities as a result of the implementation of Alternative 1.

Environmental Justice. As a result of the implementation of Alternative 1, Fort Lee does not anticipate a disproportionate adverse impact to minorities, economically disadvantaged populations or children would occur in the ROI. Fort Lee anticipates that job loss would be felt across economic sectors and at all income levels and spread geographically throughout the ROI. The proposed force reduction in military authorizations on Fort Lee would not have disproportionate or adverse health effects on low-income or minority populations in the ROI. The racial and ethnic composition of the ROI differs from that of the Commonwealth as a whole. There are fewer Hispanic and Asian people in the ROI, but a larger African American population in all affected districts. At the extreme, the City of Petersburg is 78 percent African American, compared with 19 percent for the Commonwealth as a whole. Seen at the state-wide level, adverse impacts in the ROI represent a disproportionate adverse impact to African Americans, with a less-than-expected impact to Hispanic and Asian populations.

4.14.4 Hazardous Materials and Hazardous Waste

4.14.4.1 Affected Environment

The affected environment includes the use, storage, transport, and disposal of hazardous materials and waste at Fort Lee. Fort Lee has a Hazardous Waste Facility, a Hazardous Material Control Center, and a Solid Waste Recycling Center to handle all types of waste from units and facilities on Fort Lee. Hazardous materials and waste are handled, stored and transported in accordance with DOT Regulation 49 CFR.

4.14.4.2 Environmental Consequences

No Action Alternative

There would be no impact to hazardous waste and hazardous materials on Fort Lee under the No Action Alternative. Fort Lee would continue to dispose of waste and store and manage hazardous materials in accordance with installation hazardous waste and material management plans.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

Fort Lee anticipates minor impacts to hazardous materials and hazardous waste as a result of the implementation of Alternative 1. The volume of waste generated and material requiring storage would increase slightly. Deactivating units would turn in hazardous material, such as paint, cleaning solvents, and pesticides for storage to avoid transportation risks. Deactivating units would also turn in expired hazardous material requiring disposal as hazardous waste to the appropriate locations designated by Fort Lee's Hazardous Waste Management Office. Removal of temporary facilities could increase the hazardous waste streams as components of some temporary structures, may require special handling. Over the long-term, force reduction would result in less solid and hazardous waste being generated. Deactivating units may increase the turn-in of hazardous material such as tent canvas. Hazardous materials and hazardous waste standing operating procedures and management practices would not change. The risk of RCRA, CERCLA, FIFRA, or TSCA violations would not increase under Alternative 1.

4.14.5 Cumulative Effects

Region of Influence

The ROI for this cumulative impact analysis of Army 2020 realignment at Fort Lee encompasses Chesterfield, Dinwiddie, and Prince George counties; and the Cities of Colonial Heights, Hopewell, and Petersburg in Virginia unless otherwise stated in the analysis below.

Fort Lee has been supporting the Army since 1950 when it was designated as a permanent military installation. Fort Lee is a key component of the regional economy. Chesterfield County is also a key component of the regional economy as nearly 88.2 percent of all new employment growth over the next three decades is expected to occur in the county (Fort Lee, 2008). This cumulative effects analysis considers reasonably foreseeable Army, DoD, and other federal agency actions that are planned for funding and/or implementation over the next 5 years. These actions are considered reasonably foreseeable projects because they are funded and/or zoned.

The following actions within the ROI have potential to cumulatively add impacts to the proposed reduction of approximately 2,400 military authorizations at Fort Lee. These actions are either in progress or could be initiated within the next 5 years. A number of the Army's proposed projects have been previously identified in the installation's Real Property Master Plan, the Final Environmental Assessment for the Army Lodging Facility at Fort Lee, and tiered analysis of the 49th Group Draw-Down.

Fort Lee Actions (Past, Present, and Reasonably Foreseeable)

- 49th Quartermaster Group Reduction in Authorized Strength
- 1,000 Room Lodging Facility Opening;
- Adams Avenue Barracks Construction Phases 2 and 3;
- Programmed Demolition Projects;
- Kenner Army Health Clinic New Construction; and
- Bowling Center New Construction.

Other Agency (DoD and non-DoD) and Other Public/Private Actions (Past, Present, and Reasonably Foreseeable)

- 460 Corridor Improvements;
- Intersection Enhancement Route 36 and Lee Avenue;
- Intersection Enhancement Route 36 and Puddledock Road; and
- Construction and Operation of Two New "Amazon.com" Distribution Centers.

Impacts of Cumulative Projects Considered: Virginia Department of Transportation (VDOT) anticipates that the Route 460 Corridor Improvements Project between I 295 and U.S. Highway 58 will enhance connections among the region's military installations, accommodate freight traffic, and promote economic development along the corridor with state tax incentives for distribution centers operating along the new high-speed roadway. VDOT estimates that the new high-speed roadway will create more than 4,000 jobs during construction and more than 13,000 long-term jobs when the new road opens in the expanded ROI including Prince George, Sussex, Surry, Isle of Wight, and Southampton counties (VDOT 460 Corridor 2012 Update and Morris, 2012). Impacts to VECs in the ROI associated with the 460 Corridor Improvements project are documented in VDOT's June 2008 FEIS and September 2008 ROD. The project is anticipated to result in 129 acres of wetland impacts and roughly 30,000 linear feet of stream impacts. Mitigation is included in the 460 Corridor project to offset impacts.

Intersection enhancement projects along Route 36 would temporarily increase soil erosion and traffic congestion from construction activity with less than minor impacts to VECs in the ROI. The construction and subsequent operation of two new distribution centers for Amazon.com would create 300 jobs in Dinwiddie County and 1,000 jobs in Chesterfield County (Morris, 2012).

Personnel reductions across the 49th Group (FY 2010 to FY 2012) as directed by FORSCOM (proponent) have been sufficiently analyzed and documented prior to the current analysis undertaken in this PEA. The continued draw-down of the 49th Group for FY 2013 and beyond is assumed to be covered under this PEA. 49th Group reductions (more than 1,200 military personnel associated with deactivating units as of FY 2012) have been offset, by BRAC expansion (FY 2005 to 2011) and associated gains in permanent party cadre to support growing trainee and student populations. Permanent party military population increased from 2,870 in FY 2005 to 4,748 in FY 2009, peaking at 5,910 in FY 2010. After 2010, the 49th Group draw-down began to temper BRAC growth as the permanent party population decreased to 4,694 in FY 2011 (ASIP, 2012).

Fort Lee's 1,000-Room Lodging Facility is scheduled to open in 2012 and will house a portion of the TDY and transient military population. A 2010 study on the impacts of Fort Lee's 1,000 Room Lodging Facility (Crater Planning District Commission, 2010), determined that projected increases in course load at the Army Logistics University on Fort Lee could increase the regional hotel occupancy level from 58 percent in 2009 to more than 81 percent in 2011. The study found that even with the operation of the 1,000-Room Lodging Facility on post, there would be a continued demand for lodging in the private sector. This net benefit depends on the Army's ability to maintain a structured average daily load of 2,100 or more TDY students (Crater Planning District Commission, 2010). The 2012 structured average daily load is 1,927 TDY students (ASIP, 2011). As of 2010, there were 14 hotels with more than 1,200 rooms in the development approval process. If constructed, excess supply, increased price competition, and the failure of some hotels could result (Crater Planning District Commission, 2010).

There are 544,077 square feet of facilities scheduled for demolition on Fort Lee from FY 2013 to FY 2015 (Royster, 2012). Construction of the Adams Avenue Barracks Complex, Kenner Army Health Clinic, and DFMWR Bowling Center would be a beneficial source of employment for local demolition and construction companies while enhancing Quality of Life for Soldiers on Fort Lee.

Fort Lee anticipates a range of cumulative effects resulting from the implementation of the Proposed Action and alternatives. Cumulative impacts for each alternative are as follows:

No Action Alternative

Fort Lee anticipates beneficial through minor cumulative impacts to occur when evaluating the No Action Alternative in conjunction with other past, present and reasonably foreseeable projects within the ROI. Cumulative impacts to the following VECs would have no impact, or have a minor impact only and are not carried forward for detailed discussion in this section. These VECs are: air quality, airspace, cultural resources, noise, soil erosion, biological resources, wetlands, water resources, facilities, energy demand and generation, land use compatibility, hazardous materials and hazardous waste, and traffic and transportation. Considering the aforementioned projects, the No Action Alternative would have beneficial cumulative impacts to socioeconomics in the ROI. The current socioeconomic conditions in the ROI are discussed above in Section 4.14.3.1. Job creation and economic benefits associated with the 460 Corridor Improvement Project and the construction and operation of the new Amazon.com distribution centers could bolster the local economy while the operation of the 1,000-Room Lodging Facility would have little net impact on the local economy as the average daily load of TDY students at the Army Logistics University would remain stable under the No Action Alternative. Other programmed construction and demolition activities would also benefit the local economy by creating temporary jobs and boosting lodging and dining facilities regionally.

Alternative 1: Force Reduction (up to 2,400 Soldiers and Army Civilians)

Cumulative impacts as a result of the implementation of Alternative 1 range from beneficial impacts to less than significant socioeconomic impacts. The following VEC areas are anticipated to experience either no impact or beneficial impact as a result of the implementation of Alternative 1: air quality, airspace, cultural resources, noise, soil erosion, biological resources, wetlands, water resources, facilities, energy demand and generation, land use compatibility, hazardous materials and hazardous waste, and traffic and transportation.

Fort Lee anticipates cumulative beneficial impacts to traffic and transportation; energy demand and generation; and facilities under Alternative 1, in conjunction with the regional projects discussed. Fort Lee anticipates cumulative benefits to traffic flow locally and regionally due to slight decreases in government and POV traffic occurring in conjunction with the Route 460 Corridor and Route 36 Improvement Projects. The New Construction of Kenner Army Health Clinic and the Adams Avenue AIT Barracks Complex project considered cumulatively with demolition associated with Alternative 1 would improve energy efficiency and increase the number of new more efficient facilities on post.

Socioeconomics. In addition to the impacts described in Section 4.14.3.2, the cumulative socioeconomic impact within the ROI under Alternative 1 would be anticipated to be less than significant. While there is potential for regional economic growth associated with the 460 Corridor Improvements Project and incoming retail distribution centers that could offset some adverse socioeconomic impacts, less than significant cumulative adverse impacts would be associated with the proposed loss of approximately 2,400 military authorizations. These adverse impacts would be projected to outweigh some of the potential economic gains from other projects implemented within the ROI. The overall cumulative socioeconomic impacts, as a result of the implementation of Alternative 1, would remain less than significant.

4.15 FORT LEONARD WOOD, MISSOURI

4.15.1 Introduction

Fort Leonard Wood is located just south of I-44, approximately 120 miles southwest of St. Louis, Missouri and 85 miles northeast of Springfield, Missouri (Figure 4.15-1). The installation contains approximately 61,410 acres of land in the Ozark Plateau region, located in Pulaski County. The installation is defined by the Big Piney River on its eastern boundary and the Roubidoux Creek on the western edge. Much of the surrounding land is part of the Mark Twain National Forest. The towns of Waynesville and St. Robert, to the northwest and north, are the closest municipalities to Fort Leonard Wood. Waynesville is the county seat of Pulaski County, and the commercial center of St. Robert straddles the I-44 business spur leading south into the installation. Other towns in the immediate area include Rolla, 28 miles to the northeast; Lebanon, 35 miles to the southwest; Jefferson City, 68 miles to the north; and Big Piney, Roby, and Plato to the immediate south.

Fort Leonard Wood has a diverse mission and has a average daily training population of more than 18,000 military and civilian students (ASIP, May 2012). Home to the Maneuver Support Center of Excellence, Fort Leonard Wood trains and educates service members and develops doctrine and capabilities for TRADOC's U.S. Army Chemical, Biological, Radiological, and Nuclear School (including the Chemical Defense Training Facility); U.S. Army Engineer School; U.S. Army Military Police School; three gender-integrated Initial Military Training brigades; one of only two gender-integrated Initial Military Training installations; one of only four reception stations in the Army; and the Army's largest Non-Commissioned Officers Academy. General Leonard Wood Army Community Hospital provides inpatient and outpatient care to more than 36,000 beneficiaries and is staffed by 900 medical, dental, nursing, and administrative personnel. Over the past several years, Fort Leonard Wood has received numerous additional responsibilities to include supporting the 4th MEB, a FORSCOM unit that deploys abroad to provide maneuver capabilities to Armor and Infantry units. The Humanitarian Demining Training Center and the Directorate for Counter Improvised Explosive Devices also reside at Fort Leonard Wood. A Marine Corps Detachment and an Air Force Detachment, along with a large Navy Seabee Detachment are also stationed at Fort Leonard Wood. Units from the Army Reserves and National Guard routinely train at Fort Leonard Wood and including the 102nd Training Division (Army Reserves), 35th Engineer Brigade (National Guard) as resident units as well as the Kit Bond Aviation Support Facility (National Guard). The post is home to all DoD truck driver training and a large international student detachment that has representation from over 120 different countries. Figure 4.15-1 depicts the location of the installation.

As a result of the implementation of the Proposed Action the permanent party Soldier population of Fort Leonard Wood could be reduced by up to 3,900 Soldiers and civilians and their accompanying dependents. In addition, there would be a reduction in the number and amount of students that train at Fort Leonard Wood annually, as the Army slows the pace of recruiting and re-enlistments. Much of the institutional training would continue as it currently is being conducted by the Maneuver Support Center of Excellence and other TRADOC units. As the size of the Army is reduced, the demand for the number of Soldiers trained for specific military functions may also decrease. A reduction of approximately 10 percent of the student and temporary trainee population that is routinely trained at Fort Leonard Wood each year would be anticipated with the implementation of Alternative 1.

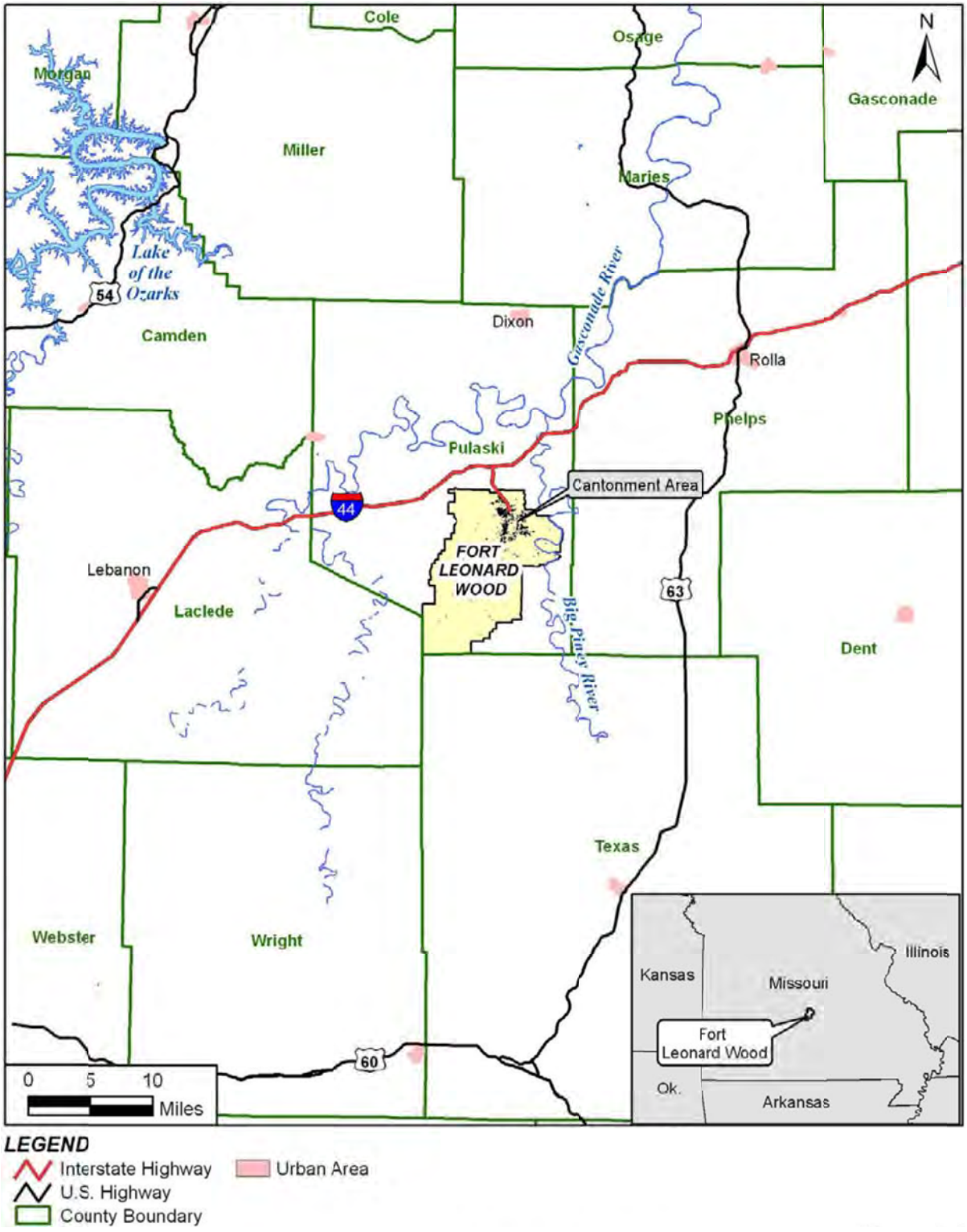

Figure 4.15-1. Fort Leonard Wood

There would be some decreases in the frequency of training events and activities performed year-round at Fort Leonard Wood and negligible beneficial environmental impacts for many VECs evaluated.

Fort Leonard Wood has a major economic impact on the surrounding community. Not only is Fort Leonard Wood a leading training installation, it is also a leading employer and economic engine for the region, employing over 9,000 civilians in a variety of fields to include information technology, medical, engineering and accounting. Fort Leonard Wood is estimated to have an annual economic impact of between $2-3 billion to the ROI. MILCON projects underway or pending have added an estimated total of more than $600 million to the regional economy.

This section incorporates by reference the *Programmatic Environmental Assessment of the Ongoing Mission – U.S. Army Maneuver Support Center and Fort Leonard Wood* (PEAFLW) (USACE, 2006). The PEAFLW provides a statement of existing conditions and typical impacts that can be used to support subsequent documents. In accordance with CEQ regulations (40 CFR 1502.20), this PEA need only summarize the issues that are specific to the alternatives, and incorporate by reference, any pertinent issues that have already been covered by the PEAFLW. The affected environment in the PEAFLW was prepared for the purpose of serving as the baseline for analysis of future projects that fall under the scope of the PEAFLW. The affected environment for the PEAFLW included the area of Fort Leonard Wood.

4.15.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Leonard Wood does not anticipate any significant adverse environmental impacts; however, significant socioeconomic impacts to regional population, economic activity and school districts are anticipated as a result of the implementation of Alternative 1 (Force reduction of up to 3,900 Soldiers and Army Civilians). Table 4.15-1 summarizes the anticipated impacts to VECs for each alternative.

Table 4.15-1. Fort Leonard Wood Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 3,900
Air Quality	Negligible	Negligible
Airspace	Negligible	Negligible
Cultural Resources	Negligible	Minor
Noise	Negligible	Negligible
Soil Erosion	Negligible	Negligible
Biological Resources	Negligible	Negligible
Wetlands	Negligible	Negligible
Water Resources	Negligible	Negligible
Facilities	Negligible	Beneficial

Socioeconomics	Beneficial	Significant
Energy Demand and Generation	Negligible	Beneficial
Land Use Conflict and Compatibility	Negligible	Negligible
Hazardous Materials and Hazardous Waste	Negligible	Minor
Traffic and Transportation	Negligible	Beneficial

4.15.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section, no more than a beneficial or negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- ***Air Quality.*** Fort Leonard Wood is currently located in an attainment area for all NAAQS. The alternatives do not include any new or additional activities that would require an air permit review or a change in attainment status; therefore, there would be no impact to air quality.
- ***Airspace.*** The alternatives do not include changes (neither horizontal nor vertical) to the FAA-designated SUA, to include access; therefore, there would be no impact to airspace.
- ***Noise.*** The alternatives do not include changes to aircraft operations or to the type of weapons training conducted; therefore, there would be no additional noise generators adding to noise impacts aside from short-term potential demolition to add to current baseline conditions.
- ***Soil Erosion.*** The alternatives do not include any ground-disturbing activities; therefore, there would be no impact to any geology or soil resources.
- ***Biological Resources.*** The alternatives do not include activities that would affect fish, wildlife, threatened and endangered species, habitat, natural resources, or vegetation; therefore, there would be no impact to biological resources.
- ***Wetlands.*** The alternatives do not include any ground-disturbing activities that would result in unpermitted loss of wetlands; therefore, there would be negligible impact to wetlands anticipated.
- ***Water Resources.*** The alternatives do not include any activities that would lead to increased water demand or surface water disturbance; therefore, there would be no impact to water resources.
- ***Facilities***. The main cantonment area is the urbanized portion of Fort Leonard Wood, and has been developed into a wide variety of land uses that comprise the elements necessary for a complete community. This includes the installation Post Exchange, commissary, housing and Family support services, medical, and mission-support facilities. Permanent party Soldiers on Fort Leonard Wood currently utilize approximately 414,500 square feet of barracks space (Parker, 2012).

  There would be no impact anticipated from the continued implementation of the No Action Alternative. Fort Leonard Wood would continue to operate and maintain its existing facilities in accordance with its current requirements. Fort Leonard Wood would

continue to implement the FRP. Fort Leonard Wood is demolishing and planning to demolish outdated facilities through the FRP. In FY 2011, eighteen facilities totaling approximately 39,000 square feet were demolished; another ten facilities have either been demolished or are in the process of being demolished in FY 2012. These facilities have a total area of approximately 64,000 square feet; and demolition for FY 2013 to FY 2017 is currently being planned. Alternative 1 would have a minor beneficial effect on facilities as it allows for the removal and release of temporary, relocatable buildings and the demolition of some older, energy-inefficient buildings that are not already planned for demolition. Additional actions would be programmed under the FRP to increase installation building performance and energy efficiency to save on installation operating costs and utilities. With the implementation of force reduction, some permanent facilities may be able to be redesignated to support units remaining at Fort Leonard Wood to provide more space and facilities better able to meet tenant unit needs. Consequently, a reduction in manpower does not necessarily equate to a proportional reduction in facility requirements.

- ***Energy Demand and Generation.*** Utilities are generally connected across the cantonment area and along defined utility corridors and contribute collectively to the overall capacity, use, and storage as a unit. As such, the ROI for this resource is the cantonment area of Fort Leonard Wood and the various utility ROWs that connect Fort Leonard Wood with the regional systems. Generally, electricity is provided by Sho-Me Power Electrical Cooperative; natural gas is provided by Omega Pipeline Company, LLC; propane is procured through a local purchase contract; and fuel oil is purchased through a regional Defense Logistics Agency Energy contract.

  There would be no impact anticipated under the No Action Alternative. Fort Leonard Wood would continue to draw the same amounts of energy from its utility provider with the same requirements for power and maintenance of power infrastructure. Alternative 1 would have a minor beneficial impact to the installation's energy resources. As a result of the implementation of Alternative 1, the installation would anticipate a reduction in energy consumption with the reduction in the installation's military and civilian populations and accompanying and supporting square footage. Fort Leonard Wood pursuit of energy efficiency and conservation measures would also contribute to reduced energy usage and energy demand reductions. Reduced energy consumption would occur from the reduction in the requirements for heated and cooled space and if some less efficient buildings were demolished and vacated buildings were moth-balled. Overall, Alternative 1 would result in beneficial impacts.

- ***Land Use Conflict and Compatibility.*** The alternatives would not change any existing land uses; therefore, there would be no land use conflicts or incompatibility.

- ***Traffic and Transportation.*** The alternatives would not increase traffic or require additional transportation options. With fewer people, there would be fewer cars and less traffic; therefore, a negligible beneficial impact could be anticipated because of decreased traffic congestion; however, there are no issues with the current traffic LOS.

Fort Leonard Wood anticipates that the implementation of any of the alternatives would result in negligible impacts for those VECs discussed above. The following provides a discussion of the VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Proposed Action alternatives.

4.15.2 Cultural Resources

4.15.2.1 Affected Environment

The prehistoric cultural chronology of the Fort Leonard Wood lands is divided into a sequence of distinct segments spanning more than 10,000 years of human occupation and adaptation, from about 8500 B.C. to A.D 1400. Prehistoric archaeological sites recognized at Fort Leonard Wood include open camp and habitation sites, caves, rock shelters, and rock burial mounds. The latter occur singly or in clusters and represent mortuary sites exclusive to the Late Woodland and Mississippian periods (A.D. 400 – 1400). Nearly 200 prehistoric sites recorded on the installation are considered eligible or are eligible for inclusion in the NRHP. A high concentration of these considered eligible or eligible sites are clustered along Roubidoux Creek and Big Piney River, with the greatest density located on Roubidoux Creek between the Hurd Hollow and Musgrave Hollow drainages.

The first historic period settlers arrived in the region in the early 19th century, establishing trading posts, living in isolated cabins, and subsisting by hunting and trapping. As populations increased in the mid-19th century farmsteads and rural communities began to appear. The population continued to grow in the late 19th century with farming, hunting, and lumbering representing the economic base until World War I. By the 1930s the federal government had become an important economic and social factor with the establishment of the Mark Twain National Forest and Civilian Conservation Corps and Works Progress Administration programs. Nearly 100 historical archaeological sites on the installation are considered eligible or are eligible for inclusion in the NRHP; however, a reassessment of all 225 recorded historical sites is ongoing to establish better their significance and NRHP eligibility status. One building from the period that predates the establishment of Fort Leonard Wood and is eligible for inclusion in the NRHP is the Rolling Heath School, constructed in 1912.

Construction of the Fort Leonard Wood cantonment began in December 1940 and was completed the following year. The 1,600 buildings constructed during this period were based on standard Office of the Quartermaster General plans for temporary mobilization construction, with the exception of a few permanent buildings such as the Water Intake and Water Treatment Plants, both eligible for inclusion in the NRHP. Other important NRHP-eligible historic properties dating from this period include the 13 buildings that comprise the World War II Temporary Buildings Historic District, Building 430 (Red Cross), Building 2051 (Garlington House), and Building 2101 (Black Officers Club). Two NRHP-eligible historic landscapes on the installation, Veteran's Park and Gammon Field, also date to the World War II era. In 1943 a Prisoner of War camp was completed and began housing primarily German soldiers. The camp closed in 1946 and was largely demolished in the early 1950s. The physical legacy of the camp is the numerous stonework features throughout the installation constructed by the POWs. Several NRHP-eligible POW Stonework Historic Districts and individual structures have been identified. Additionally, the site of the former POW camp is a NRHP-eligible archaeological site.

Fort Leonard Wood was closed to full-time military operations in 1946 and remained on inactive status until 1950, when it was reactivated during the Korean conflict. Fort Leonard Wood's role as an engineer training center and reception station continued through the 1950s, culminating with it being declared a permanent installation in 1956. The change in status to a permanent installation allowed the government to begin building permanent structures. The building boom began in 1956 with the construction of the first permanent Family quarters. This was quickly followed by more Family housing projects and the construction of a post chapel, schools, hospital, theater, trainee barracks, and enlisted and officers quarters. Between 1961 and 1965 four large "Rolling Pin" unaccompanied personnel housing complexes were constructed. One of these complexes, located in the 600 area of the installation and containing 29 buildings, is

eligible for inclusion in the NRHP as a historic district, making it exempt from the Cold War Era (1946-1974) Unaccompanied Personnel Housing program comment adopted by the Army in 2007. Building 450 (Main Post Chapel), constructed in 1962, is also eligible for inclusion in the NRHP.

The Vietnam conflict increased the number of Soldiers stationed at Fort Leonard Wood and accelerated building and facility improvements that continue to this day. At present the majority of the facilities constructed prior to 1972 on Fort Leonard Wood have been inventoried and their NRHP eligibility status has been determined. By 2017, additional facilities inventory would be necessary.

The Fort Leonard Wood CRM program operates under procedures and policies outlined in the installation's ICRMP (USACE, 2003). The ICRMP was completed in 2003 and is updated through an annual report and 5-year management plan. Additionally, maintenance and repair manuals and landscape management plans have been developed for many of Fort Leonard Wood's NRHP-eligible historic properties.

4.15.2.2 Environmental Consequences

No Action Alternative

Impacts to cultural resources under the No Action Alternative would be negligible. Activities with the potential to affect cultural resources are monitored and mitigated when anticipated through a variety of preventative and minimization measures. Activities are managed by Fort Leonard Wood cultural resource management program which consults with the SHPO on any action that could potentially affect eligible cultural resources.

Alternative 1: Force Reduction (up to 3,900 Soldiers and Army Civilians)

Fort Leonard Wood anticipates short-term minor adverse impacts from potential facilities demolition and long-term minor beneficial impacts to cultural resources as decreased training activity would reduce the risk of inadvertent disturbance of artifacts and archaeological sites. Any ground disturbing activity resulting from the removal of temporary structures would be coordinated with Fort Leonard Wood's CRM and the SHPO as necessary. The risk of NHPA, ARPA, and NAGPRA violations would not increase as a result of the implementation of Alternative 1. Minor impacts are anticipated as a result of Alternative 1 at Fort Leonard Wood with regard to the demolition of temporary facilities. There would be a very low potential for adverse effects to historic buildings and/or archeological resources. Removal of outdated infrastructure has the potential to affect historic structures, but such actions would be conducted in accordance with the current agreements between Fort Leonard Wood's CRM and the state for consultation and management of historic structures. If the undertaking has the potential to affect historic properties adversely, consultation with the SHPO would occur per 36 CFR 800 as required. There is a low potential for any unique or potentially eligible historic structures to be affected as a result implementation of Alternative 1; however, full consultation with the SHPO would occur, as required.

4.15.3 Socioeconomics

4.15.3.1 Affected Environment

Fort Leonard Wood is located in Pulaski County, Missouri. The Fort Leonard Wood MSA comprises Pulaski County. The ROI consists of Pulaski, Phelps, and Laclede counties.

Population and Demographics. The daily working population of Fort Leonard Wood consists of 9,495 full-time permanent party Soldiers and Army civilian employees working on post. The permanent party population that lives on Fort Leonard Wood is estimated to consist of

approximately 2,997 Soldiers and 2,580 dependents, for a total of 5,577. This does not include temporary trainees and students, which add significantly to the Fort Leonard Wood resident on-post population. Finally, the portion of the ROI population related to Fort Leonard Wood is estimated to consist of approximately 14,090 permanent party Soldiers, Army civilian employees, and their dependents living off post.

The ROI county population is over 130,000. Compared to 2000, the 2010 population increased in Pulaski, Phelps, and Laclede counties (Table 4.15-2). The racial and ethnic composition of the ROI is presented in Table 4.15-3.

Table 4.15-2. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Pulaski	50,000	+ 27.0
Phelps	45,000	+ 13.7
Laclede	35,600	+ 9.4

Table 4.15-3. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Missouri	81	11	2	4	0	2	0
Pulaski	72	11	1	9	2	4	1
Phelps	90	2	0	2	3	2	0
Laclede	94	1	1	2	0	2	0

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased in Pulaski, Phelps and Laclede counties, and decreased in the State of Missouri (Table 4.15-4). Employment, median home value and household income, and poverty levels are presented in Table 4.15-4.

Table 4.15-4. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
Missouri	2,358,706	- 1.72	134,500	45,149	14.60
Pulaski	8,253	+ 45.30	115,100	45,073	14.10
Phelps	13,099	+ 6.70	114,700	40,260	17.90
Laclede	12,107	+ 0.10	93,000	37,294	16.00

Family housing on Fort Leonard Wood can accommodate 1,837 Families. Fort Leonard Wood currently has 1,934 Family housing units on post managed through a partnership with Balfour

Beatty Communities, LLC through the RCI. Permanent party Soldiers occupy 1,698 of those on-post housing units. Fort Leonard Wood Family housing occupancy rates for 2010 and 2011 were 89 percent averaged.

Fort Leonard Wood has barracks space for 1,299 unaccompanied personnel. Fort Leonard Wood has 414,500 square feet of barracks space for permanent party unaccompanied personnel (Parker, 2012).

Single-family dwellings are the dominant type of housing found in the off-post ROI and a lack of new multi-family construction has placed pressure on this segment of the market to serve as rental housing. Approximately 3,100 single-family homes were supporting Soldiers.

Schools. Permanent party military dependants living on-post attend Waynesville R-VI Schools. As of January 2012, 6,647 military dependants live in Fort Leonard Wood Family housing. As many as 4,000 school-age Fort Leonard Wood children living off-post attend various school districts in the surrounding area.

Public Health and Safety.

- **Police Services.** The Fort Leonard Wood Directorate of Emergency Services (DES) Law Enforcement Branch and Security Operations Branch oversees law enforcement operations, patrols, gate security, training, traffic accidents, and criminal investigations on the installation. City, county, and state police departments provide law enforcement in the ROI.
- **Fire and Emergency Services.** The Fort Leonard Wood Fire and Emergency Services Branch responds to emergencies involving structures, facilities, transportation equipment, hazardous materials, and natural and man-made disasters; directs fire prevention activities; and conducts public education programs. The Fort Leonard Wood Fire and Emergency Services Branch have mutual aid agreements with Pulaski County and the cities of Saint Robert and Waynesville.
- **Medical Facilities.** Fort Leonard Wood's on-post medical services are administered at the General Leonard Wood Army Community Hospital (GLWACH). This facility services all permanent party, Active Duty personnel and their dependents, as well as retirees and their dependents. The Consolidated Troop Medical Clinic is the designated clinic for all Initial Entry Training (IET) and AIT Soldiers assigned to Fort Leonard Wood in a training status. The services provided by Consolidated Troop Medical Clinic include sick calls, physical exams, preparation for overseas movement, case management, laboratory, pharmacy, physical therapy, radiology, and occupational therapy. Also, the Warrior Transition Unit provides command and control, primary care, and case management for service members receiving treatment for injuries suffered while deployed in the war on terrorism. Warrior Transition Unit patients can receive specialized care services at the GLWACH.

  Off-post medical facilities provide a varied range of primary and specialty health care capability. Active Duty Family members and retirees and their Family members can receive care at GLWACH's Community Based Primary Care Clinic located off post in nearby Saint Robert.

  The Roll Dental Clinic, Harper Dental Clinic, and GLWACH Hospital Oral Maxillofacial Department provide dental services for permanent party members including the Marines, Navy and Air Force Detachments, and Soldiers attending the IET and AIT.

Family Support Services. Fort Leonard Wood's ACS is a human service organization with programs and services dedicated to assisting Soldiers and their Families under FMWR. Fort Leonard Wood's Child, Youth & School Services is a division of FMWR. It provides facilities and

care for children ages 4 weeks to 5 years, school age care for ages 6 to 10 years, a middle school and teen program for ages 11 to 18 years, as well as sports and instructional classes for children of Active Duty military, DoD civilian, and DoD contractor personnel. Children of retired military members are eligible to participate in the Middle School and Teen Youth Sports and SKIES programs. Fort Leonard Wood's Youth Sports and Fitness Program offers both individual and team activities and involves not only Fort Leonard Wood teams but also the surrounding community teams.

The Missouri Department of Social Services, which operates across the county, and local cities' social service departments provide assistance to all Missouri residents, including Active Duty military personnel and their Families stationed on Fort Leonard Wood. Missouri Department of Social Service programs include adult and child protective services, child care, adult day care, assisted living facilities, financial assistance, food stamps, low-income energy assistance, and support for adults and children with special health care needs or disabilities, domestic violence, and substance abuse counseling.

Recreation Facilities. Fort Leonard Wood offers its military community, Families, civilians, and surrounding communities batting cages, Frisbee golf, a skate park, auto crafts shop, outdoor swimming pool, bowling center, go-kart race track, 18-hole miniature golf course, 18-hole golf course, fitness centers, outdoor recreation opportunities including access to the Lake of the Ozarks Recreation Area, sports teams, and a public library through FMWR.

4.15.3.2 Environmental Consequences

No Action Alternative

Fort Leonard Wood anticipates beneficial socioeconomic impacts under No Action Alternative. Fort Leonard Wood anticipates that the No Action Alternative would provide a continued contribution of economic and social benefits as more businesses and jobs are drawn to the area and as Fort Leonard Wood would continue to draw on community services and contribute to the tax base of the local economy. No additional impacts to housing, public and social services, public schools, public safety, or recreational activities are anticipated. Fort Leonard Wood's continuing operations would represent a beneficial source of regional economic activity.

Alternative 1: Force Reduction (up to 3,900[8] Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of approximately 3,900 Soldier and Army government civilian employees, each with an average annual income of $41,830. In addition, this alternative would affect an estimated 2,156 spouses and 3,709 dependent children, for a total estimated potential impact to 5,865 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 9,729 military employees and their dependents.

Based on the EIFS analysis, there would be significant socioeconomic impacts for population and employment in the ROI for this alternative. There would be no significant impacts for sales volume or income. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.15-5. Table 4.15-6 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

[8] Calculations used a number of 3,864 Soldiers and civilians as the basis for estimating socioeconomic impacts. This number was derived by assuming the loss of 35 percent of Fort Leonard Wood's Soldiers and up to 15 percent of the civilian workforce. As discussed in Chapter 3, this number is rounded to the nearest hundred personnel when discussing impacts of Alternative 1.

Table 4.15-5. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	8.81	8.02	5.85	4.25
Economic Contraction Significance Value	- 8.54	- 7.81	- 6.2	- 3.17
Forecast Value	- 8.00	- 6.75	- 11.21	- 7.5

Table 4.15-6. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- $167,559,700	- $177,879,600	- 4,314 (Direct) - 504 (Indirect) - 4,818 (Total)	- 9,729
Percent	- 8.00 (Annual Sales)	- 6.75	- 11.21	- 7.5

The total annual loss in direct and indirect sales in the ROI represents an estimated -8.0 percent change in total sales volume from the current sales volume of $2.09 billion within the ROI. State tax revenues would decrease by approximately $6.7 million as a result of the loss in revenue from sales reductions. Some counties within the ROI supplement the state sales tax of 4.225 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by 6.75 percent. While approximately 3,900 Army Soldier and government civilian positions would be lost within the ROI as a direct result of the implementation of Alternative 1, EIFS estimates another 450 military contract service jobs would be lost, and an additional 504 job losses would occur indirectly as a result of a reduced demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 4,818 jobs, or a -11.21 percent change in regional non-farm employment. The total number of employed positions (non-farm) in the ROI is estimated to be 42,954. A significant population reduction of 7.5 percent within the ROI is anticipated as a result of this alternative. Of the approximately 130,000 people (including those residing on Fort Leonard Wood) that live within the ROI, 9,729 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes civilian and military employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.15-7 shows the total projected economic impacts, based on the RECONS model that would occur as a result of the implementation of Alternative 1.

Table 4.15-7. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- $121,701,957 (Local) - $272,740,872 (State)	- $170,823,043	- 4,113 (Direct) - 290 (Indirect) - 4,403 (Total)
Percent	- 5.80 (Total Regional)	- 6.49	- 10.25

The total annual loss in direct and indirect sales in the region represents an estimated -5.80 percent change in total regional sales volume according to the RECONS model, an impact that is 2.2 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately $10.9 million as a result of the loss in revenue from sales reductions, which would be $4.7 million more in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by 6.49 percent, slightly less than the 6.75 percent reduction projected by EIFS. While approximately 3,900 Soldier and Army government civilian positions would be lost within the ROI, RECONS estimates another 249 military contract and service jobs would be lost, and an additional 290 job losses would occur indirectly as a result of reduced demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 4,403 jobs, or a -10.25 percent change in regional non-farm employment, which would be 0.96 percentage points less than projected by the EIFS model.

When assessing the results together, both models predict a similar significantly negative economic impact associated with the implementation of Alternative 1, and a net reduction of economic activity within the ROI.

Demographics. Fort Leonard Wood anticipates training capacity loss under the Proposed Action, resulting in a substantial decrease in the volume of trainees, TDY military, transient military and civilians served on post. Though overall population would decrease, Fort Leonard Wood does not anticipate significant impacts to installation demographic composition under the Proposed Action.

Housing. The proposed reduction would increase availability of single barracks and single Soldier housing. The proposed reduction would increase the availability of Family housing on-post, as well. Fewer notices of non-availability would be generated and fewer Soldiers would live off-post. The increased percentage of Soldiers living in Family housing would have long-term beneficial impacts to force protection under the Proposed Action. Fort Leonard Wood anticipates long-term adverse impacts to the housing and rental market in the ROI under the Proposed Action with the most impact felt in Pulaski and surrounding counties where rental vacancy and current military tenant populations are highest.

Schools. The proposed reduction could have significant impacts to schools receiving military dependants and also to those receiving civilian dependents of positions that may be lost as a result of military population reduction. Schools would be negatively impacted by a loss of Federal Impact Aid received for supporting the education of children from military and Army civilian Families. As the numbers of these dependents are reduced, it would likely have quite a serious negative financial impact in Pulaski County, and some impact in certain school districts

in surrounding counties, such as the Plato school district in Texas County, which have a significant military/civil service component to its school population.

Public Health/Safety. Under the Proposed Action resident and daytime population levels on Fort Leonard Wood would decrease, potentially reducing demand on area law enforcement, local fire and emergency service providers, and medical care providers in the community and on-post. AIT Soldiers, Active Duty military, remaining permanent party Soldiers, retirees and their dependants would continue to demand these services at reduced levels. Fort Leonard Wood does not anticipate significant adverse or beneficial impacts to public health and safety under the Proposed Action.

Family Support Services. Under the Proposed Action, a reduction in permanent party Soldiers could reduce demand on select Family support service providers on post. AIT Soldiers, Active Duty military, remaining permanent party Soldiers, retirees and their dependants would continue to demand child care and other ACS programs available on Fort Leonard Wood. Off-post Family support services in Pulaski County would also likely experience a decrease in clients. Fort Leonard Wood does not anticipate significant adverse or beneficial impacts to Family support services under the Proposed Action.

Environmental Justice. Under the Proposed Action, Fort Leonard Wood anticipates that job loss and economic impact would be adverse. The proposed reductions on Fort Leonard Wood would not be anticipated to have disproportionate or adverse health effects on low-income or minority populations. There are no historically-minority communities in the area, and there are no anticipated disproportionate economic impacts to racial, ethnic or religiously affiliated sectors of the population. However, a disproportionate amount of economic impact would impact lower income individuals and Families surrounding Fort Leonard Wood. Economic impacts to these sectors of the surrounding community would be significant. Many low income populations provide services to support the military in the region.

4.15.4 Hazardous Materials and Hazardous Waste

4.15.4.1 Affected Environment

The affected environment includes the use, storage, and transport of hazardous materials at Fort Leonard Wood, and the affected environment includes the storage, transport, and contracted disposal of hazardous waste at Fort Leonard Wood. Fort Leonard Wood has a 90-day storage facility to handle all types of hazardous waste from units and facilities on Fort Leonard Wood. Hazardous materials and hazardous waste are handled, stored, and transported in accordance with RCRA, state, and local regulations.

4.15.4.2 Environmental Consequences

No Action Alternative

There would be negligible impacts anticipated under the No Action Alternative. Fort Leonard Wood would continue to operate in accordance with current installation hazardous waste and material management plans.

Alternative 1: Force Reduction (up to 3,900 Soldiers and Army Civilians)

Fort Leonard Wood anticipates temporary minor impacts with the increase in the volume of hazardous waste generated and hazardous material requiring storage as a result of the implementation of Alternative 1. Deactivating units would turn in hazardous material (paints, cleaning solvents, pesticides etc.) to the Hazardous Material Control Center to avoid transportation risks. Deactivating units would also turn in expired hazardous material that requires disposal as hazardous waste, which requires coordinated pickups by the DRMO

Hazardous Waste contractor. More rapid implementation of the FRP, and removal of temporary facilities could increase the hazardous and solid waste streams as components of some temporary structures, such as treated tent canvas, are disposed of as hazardous waste. Hazardous materials and waste SOPs and management practices would not change. The risk of RCRA or CERCLA violations would not increase under the Proposed Action. Over the long-term, force reduction would result in the generation of less solid and hazardous waste.

4.15.5 Cumulative Effects

Fort Leonard Wood has a significant economic impact on the surrounding community. Not only is Fort Leonard Wood a leading training installation, it is also a leading employer and economic engine for the region, employing over 9,000 civilians in a variety of fields to include information technology, medical, engineering and accounting, and boasting an annual economic impact of between $2-3 billion. MILCON projects underway or pending starting in the coming year(s) are estimated to total more than $600 million. Because of Fort Leonard Wood's presence, in the adjacent communities, recent growth has included the addition of Buffalo Wild Wings, Colton's Steakhouse, two new Subways, Panera Bread, three new convenience stores, a new community water park and pool, a new high school and elementary school, and a few new hotels.

Fort Leonard Wood Projects Recently Completed or Ongoing

- Real Property Master Plan update (in progress);
- Range Complex Master Plan update (in progress);
- Range 24 – New Multi-Purpose Machinegun Range, including .50 caliber familiarization and qualification;
- MEDCOM – Primary Care Clinic & Warrior in Transition Unit Complex;
- FORSCOM – New 4th MEB Complex including Brigade Headquarters, Battalion Headquarters, Maintenance Facilities, and 5-Company Operations Facilities;
- Permanent Party Barracks – Completing last phase (5) of new PP barracks;
- Advance Individual Training Barracks – New Battalion Headquarters, Barracks/COFs, & Dining Facility recently completed; two new, similar MILCON projects projected in FY 2015 to FY 2016;
- Family Housing – Major new construction has been completed and is ongoing;
- Leonard Wood Institute testing renewable energy systems;
- 25-year lease with Turning Pointe for a Technology Park on Fort Leonard Wood; and
- Fort Leonard Wood's Installation Strategic Sustainability Plan (ISSP). Fort Leonard Wood has developed and is beginning to implement six long-term goals that enhance the viability of the garrison to provide military, civilian, and Family members with the infrastructure, services, and programs necessary for mission accomplishment.

Other Services

- U.S. Marine Corps, Navy, Air Force and other service reductions. These services, particularly the U.S. Marine Corps, train their Military Police and Engineers at Fort Leonard Wood. Reductions in the size of other services would reasonably be anticipated to lead to reduction in numbers of students and other permanent party at Fort Leonard Wood.

Alternative 1: Force Reduction (up to 3,900 Soldiers and Army Civilians)

When considering the potential reductions to other military services, who also train on Fort Leonard Wood, socioeconomic impacts would be expected to increase in comparison to those impacts discussed in Section 4.15.3.2. At this time, other services have not finalized military end-strength reduction plans, but these additional reductions would be anticipated to add to impacts that are already expected to be significantly adverse. There could, therefore, be additional significant impacts to the ROI that may extend beyond the direct and indirect significant economic impacts estimated for employment and population. Depending on the level of force reduction implemented by other services, additional significant impacts to sales volume and regional income could also occur. Impacts to state and local tax revenues would also be larger impacts when considering the lost revenue from combined military service reductions.

Cumulatively, impacts to facilities, energy demand and generation, and traffic and transportation would be beneficial, overall, as a result of reduced training loads and garrison operations activity. The impacts of other projects, when cumulatively considered in conjunction with the implementation of Alternative 1, would not outweigh beneficial impacts of its implementation for these VECs.

Cumulatively, impacts to cultural resources and hazardous materials and hazardous waste would be minor, overall, as a result of currently planned demolition and implementation of the installation's FRP plan in conjunction with increase demolition activities as a result of the implementation of Alternative 1.

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Programmatic Environmental Assessment for Army 2020 Force Structure Realignment

Chapter 4
Affected Environment
and
Environmental Consequences

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Section 4.17 Fort Riley, Kansas
Section 4.18 Schofield Barracks and U.S. Army Garrison Hawai'i
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Assisted by:
Potomac-Hudson Engineering, Inc.
Gaithersburg, MD 20878

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4.16 FORT POLK, LOUISIANA

4.16.1 Introduction

The Joint Readiness Training Center (JRTC) and Fort Polk is located in west-central Louisiana in Vernon, Sabine, and Natchitoches parishes, near the communities of Leesville and DeRidder, and about 15 miles east of the Texas-Louisiana border (see Figure 4-16.1). Fort Polk is divided into two separate land masses: Fort Polk Military Reservation (main post) and Peason Ridge Training Area. The main post consists of 107,024 acres, which includes approximately 67,000 acres of Army-owned land on the northern portion of the installation and another 40,000 acres of land managed by the USFS.

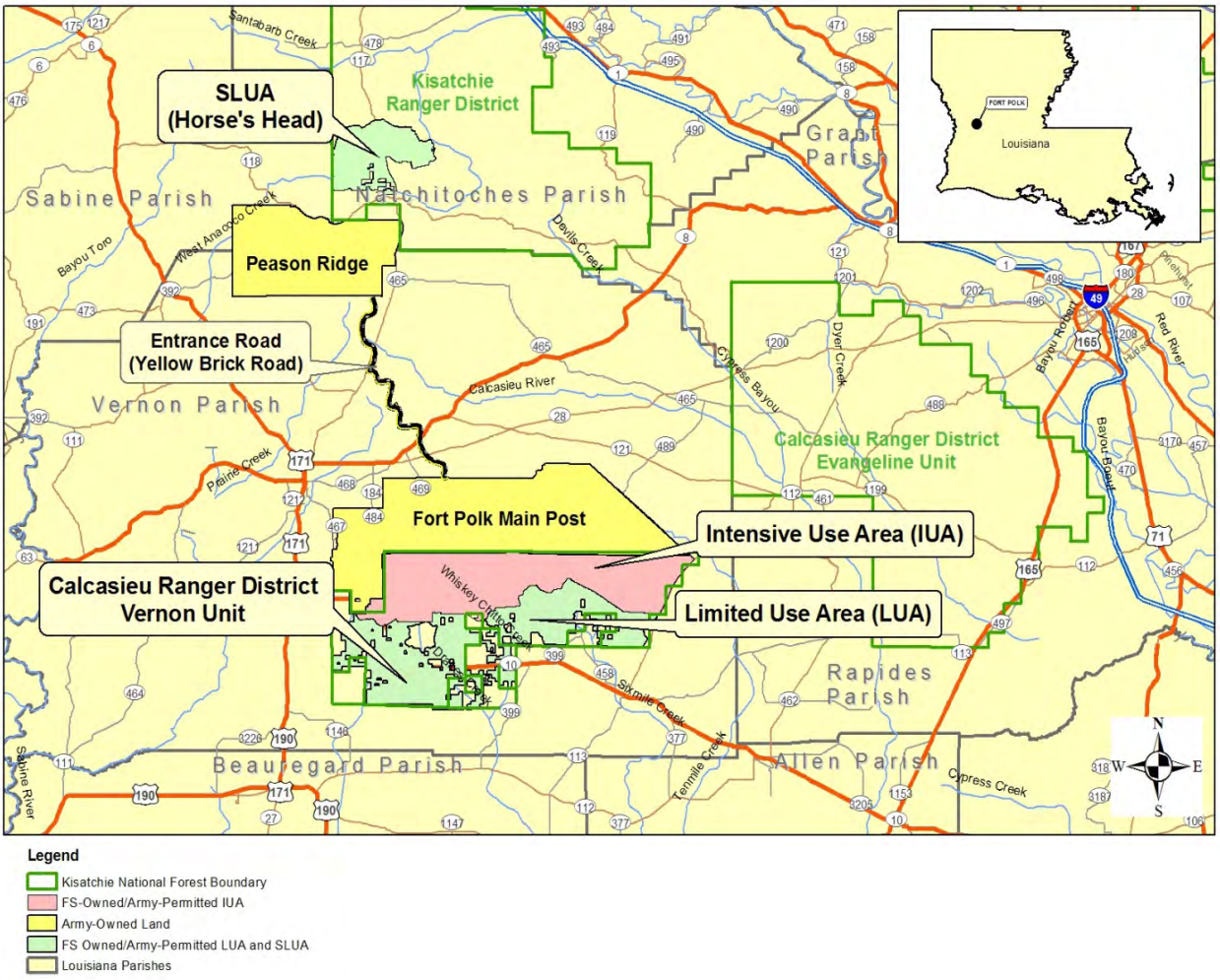

Figure 4.16-1. Fort Polk

Peason Ridge is located approximately 15 miles north of the main post, and in Vernon, Sabine, and Natchitoches Parishes. Peason Ridge is approximately 33,490 acres. Peason Ridge is used to support both Army maneuver and live-fire training, but is not utilized for long-term housing of Army personnel or civilians, which occurs on the main post. Additionally, the Army has leased a parcel of land to support the transport and convoys of units to and from main post to Peason Ridge.

The Army owns 26 acres of lakefront property at Toledo Bend Reservoir which is located approximately 45 miles northwest of Fort Polk in Sabine Parish. This recreational area is operated by the Fort Polk FMWR.

Lands utilized on the USFS, Kisatchie National Forest, are governed by a special use permit agreement and operating plan. Fort Polk utilizes approximately 40,000 acres of National Forest Lands in the southern portion of main post referred to as the Intensive Use Area (IUA). This area is used for live-fire training. Adjacent to and south of the IUA is the Limited Use Area (LUA). The LUA consists of approximately 45,000 acres of land, which is available for foot and vehicle maneuver training only. No live-fire activities are performed in these areas.

North of Peason Ridge is an area of USFS land, referred to as the Special LUA (SLUA), or "Horse's Head", due to its configuration. The SLUA consists of 12,380 acres and is available for limited training by the JRTC and Fort Polk (Table 4.16-1).

Table 4.16-1. Army and Forest Service Real Property Acreage on Fort Polk

Real Property Parcel	Administering Agency	Size (acres)
Main Post	Army	66,998
Peason Ridge	Army	33,491
Intensive Use Area	Forest Service	40,481
Limited Use Area	Forest Service	44,824
Special Limited Use Area (Horse's Head)	Forest Service	12, 380
Total		**198,174**

In February 2010 Fort Polk completed the *Joint Readiness Training Center and Fort Polk Land Acquisition Program Environmental Impact Statement.* Expansion of Fort Polk, up to 100,000 acres, was analyzed and the installation received the authorization to actively pursue the land purchase program. In FY 2012 the USACE began closing on some of these new properties. A four stage process was analyzed in the EIS to assist the installation in preparing these lands for training. Since newly-acquired lands are not ready for training and are not yet in use by the Army, they are not reflected in the training inventory. This analysis focuses on the land that currently is being used to support the Army mission, and, therefore, does not include analysis of environmental impacts on newly acquired parcels which are not yet in the current training land inventory.

Fort Polk currently has approximately 136,000 acres of maneuver area suited for vehicle and non-vehicular military training. It has long supported armored and mechanized unit training and dismounted infantry unit training, and is home of the Army's JRTC. The JRTC is the Army's premier combat training center for infantry units. JRTC is one of the three Combat Training Centers that conduct thorough, realistic, multi-echelon, joint, and combined arms training. The purpose is to train leaders to deal with complex situations; to create flexible, skilled Soldiers; and develop highly proficient, cohesive units capable of conducting operations across the full spectrum of conflict. In FY 2011, JRTC executed six Mission Rehearsal Exercises, one Full Spectrum Operations/Direct Action exercise and two Special Operations Force rotations. Currently six Mission Rehearsal Exercises are scheduled for FY 2012 and nine training rotations are scheduled for FY 2013.

Fort Polk is home to the JRTC Operations Group, the 1st MEB, 10th Mountain Division (4/10 BCT), 1st Battalion (Airborne), 509th Parachute Infantry Regiment (1-509 (Airborne), 162nd Infantry Training Brigade (Foreign Security Forces-Transition Team), 5th Aviation Battalion, and the 115th Combat Support Hospital. Fort Polk's primary missions include supporting the training

and quality of life of these resident units, as well as the training the brigades and battalions that travel to the JRTC to complete large-scale maneuver training events.

Fort Polk has a well-developed range infrastructure. As a Training Center its primary capabilities include a large force-on-force maneuver area and an instrumented live-fire maneuver area. Encroachment from urbanization is not yet a challenge, but ranges do require land management and maintenance to remain in optimal condition for training.

4.16.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Polk does not anticipate any significant adverse environmental impacts as a result of the implementation of Alternative 1 (Force reduction of up to 5,300 Soldiers and Army Civilians) or Alternative 2 (Installation gain of up to 1,000 Soldiers). The Army does anticipate significant adverse socioeconomic impacts to regional economic activity, housing, and school districts within the ROI for Alternative 1. Table 4.16-2 summarizes the anticipated impacts to VECs from each alternative.

Table 4.16-2. Fort Polk Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 5,300	Alternative 2: Growth of up to 1,000
Air Quality	Negligible	Beneficial	Minor
Airspace	Negligible	Negligible	Negligible
Cultural Resources	Negligible	Negligible	Negligible
Noise	Negligible	Negligible	Negligible
Soil Erosion	Minor	Negligible	Minor
Biological Resources	Negligible	Negligible	Negligible
Wetlands	Negligible	Negligible	Minor
Water Resources	Negligible	Beneficial	Minor
Facilities	Negligible	Beneficial	Less than Significant
Socioeconomics	Negligible	Significant	Negligible
Energy Demand and Generation	Negligible	Beneficial	Negligible
Land Use Conflict and Compatibility	Negligible	Negligible	Minor
Hazardous Materials and Hazardous Waste	Negligible	Minor	Minor
Traffic and Transportation	Negligible	Beneficial	Minor

4.16.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section below, no more than a beneficial or negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- ***Airspace.*** The JRTC and Fort Polk manages a dedicated SUA that spans 1,100 square miles, with the military installation in the center. The SUA defines the airspace in which military aircraft vertical and horizontal activities must be limited or restricted. Flight restrictions and communication requirements within this area are not imposed on nonparticipating aircraft operating according to visual flight rules.

  Fort Polk has two restricted areas within the MOA on the installation and operates these areas in accordance with the SUA requirements. Fort Polk has access to this airspace continuously and air operations take place day and night within this area.

  The No Action Alternative would not produce any conflicts with overlying restricted airspace. Impacts of Alternative 1 would be negligible. The use of airspace would not change significantly with the loss of ground units as a result of implementation of this alternative. Aviation and UAS would continue to require airspace to support training. This implementation of Alternative 1 would result in a slight and marginally lower utilization rate of existing military airspace as some units with UAS may be inactivated and no longer require activation and use of the airspace. Use of the installation air space would be scheduled to coordinate with existing mission activities. The loss of these units to Fort Polk would decrease operations of UAS, and use of this airspace would continue to be managed through scheduling and balancing training requirements with airspace availability.

  There would be a negligible impact to airspace as a result of the implementation of Alternative 2. The increased use of airspace would likely remain unchanged or could change with a negligible increase. Additional airspace would not be required, and scheduling, activation, and utilization of existing military airspace would proceed as it currently does without change.

- ***Cultural Resources.*** Fort Polk's ICRMP (Fort Polk, 2012) provides guidance and procedures to ensure all legal responsibilities for the conservation of cultural resources are being implemented. This plan also outlines procedures for consultation with the Louisiana SHPO, the Advisory Council, the USFS, Native American Indian Tribes, and other potential partners in cultural resources management. This ICRMP applies to cultural resources management on Fort Polk and on portions of the USFS LUA potentially affected by JRTC and Fort Polk mission activities. Fort Polk is currently updating the ICRMP for the period of FY 2013 to FY 2017. No significant changes have taken place since the last update that would change guidance and plan implementation components.

  Fort Polk and all USFS IUA lands have been 100 percent Phase-I surveyed and Phase-II tested. All USFS LUA lands have been 100 percent Phase-I surveyed, but Phase-II testing has not occurred at all sites; therefore, all sites potentially eligible for the NRHP are located within the LUA. A total of 3,312 archaeological sites have been identified on Fort Polk with 129 of those being eligible for the NRHP and 127 are classified as potentially eligible. All eligible sites are monitored twice per year and potentially eligible sites are monitored once per year (including those on the IUA and LUA as per the Special Use Permit Agreement with the USFS). The archaeologist monitoring the site inspects the area for signs of looting, vandalism, or other human-related or natural damages. All eligible and potentially eligible protected sites are posted with orange carsonite signs with reflective decals prohibiting driving and digging within the site boundaries.

  Fort Polk maintains and monitors a total of 19 historic cemeteries (including those on the IUA and LUA as per the Special Use Permit Agreement with the USFS). These cemeteries are routinely monitored to assess their overall conditions, as well as record

any evidence of looting or vandalism. Fort Polk contains no prehistoric or tribal cemeteries or Native American remains and burial objects. Additionally, there are no known TCPs or sacred sites on the installation.

No eligible or potentially eligible standing structures are located on Fort Polk. All World War II temporary wood buildings located on Fort Polk are addressed under the Nationwide Programmatic Memorandum of Agreement between the DoD, the ACHP, and the National Conference of SHPOs. Additionally, no World War II-era buildings have been deemed eligible for the NRHP. In 2010, an architectural survey was conducted to record and assess the eligibility of Cold War buildings on the installation. All Cold War buildings were found to be ineligible for the NRHP.

Impacts to cultural resources under the No Action Alternative would be negligible. Activities with the potential to affect cultural resources are monitored and regulated when anticipated through a variety of preventative management and minimization measures through the Fort Polk cultural resources management office.

Negligible impacts are anticipated with Alternative 1 at Fort Polk. Removal and release of temporary facilities would have no potential for adverse effects to historic buildings because there are none on the installation and very low potential to impact archeological resources. If the undertaking has the potential to affect historic properties adversely, consultation with the SHPO would occur per 36 CFR 800 as required. There is a very low potential for any unique or potentially eligible historic structures to be affected as a result of this action, and if such an action is proposed, full consultation with the SHPO would occur, as required.

Alternative 2 is anticipated to have a negligible impact to cultural resources. Measures are in place to accommodate training to prevent adverse impacts to cultural resources. The types of training conducted by the additional Soldiers would not change, though some training areas on Fort Polk might be used with marginally more frequency or intensity compared with current baseline conditions. Fort Polk CRMs would continue to follow the procedures outlined in the ICRMP in order to protect cultural resources. The increase of range usage would potentially increase the use of bivouac areas that are adjacent to ranges which could lead to an increased risk of loss of some cultural resources through small-scale ground disturbance activities. An increase in training associated with 1,000 additional Soldiers could increase use of the training areas and reduce access to cultural resource sites for monitoring and management. Overall, impacts from this alternative to cultural resources would be negligible.

- ***Noise.*** Fort Polk's acoustic environment is typically impacted by noise generating activities such as commercial air traffic, and logging operations near the post, highway and road traffic, hunting, as well as military training. The IONMP addresses these issues in a proactive manner. Elements of the IONMP include assessment of noise levels, education of the military and civilian community, management of noise complaints, mitigation of noise and vibration, the "Fly Neighborly" program, and noise abatement procedures. As a good steward, sensitive to noise complaints and annoyances, Fort Polk's Public Affairs Office maintains a Noise Hotline (337-531-1431) to receive noise complaints or other concerns about military training. The Public Affairs Office monitors the hotline daily and has a policy of responding to complaints within 24 hours.

  Principal sources of noise resulting from military training operations at JRTC and Fort Polk may include: large caliber weapons, small arms, other ordnance, fixed-wing aircraft, rotary-wing aircraft, military vehicles, and other daily operations. (USACE, 2011) The small arms ranges at Zion Hills and Peason Ridge did not need noise contours as even

.50 caliber rifle noise did not extend beyond the installation border. On a "busy" training day, noise from large caliber weapons fire and artillery extends 3,280 to 16,404 feet from the installation boundary and is categorized in a normally incompatible NZ II. NZ III, classified as incompatible, does not extend beyond the installation. Noise measurements taken by the U.S. Army Center for Health Promotion and Preventive Medicine show that the noise experienced on-post is slightly higher than the levels experienced off post.

No additional impacts from noise are anticipated under the No Action Alternative. The acoustic environment of Fort Polk would continue to be affected by small- and large-caliber weaponry, some artillery, and aircraft overflight. Other activities, such as ground maneuver training and exercises resulting in noise created by personnel and vehicles, would continue to contribute noise on and around Fort Polk, to the same levels and intensity as historically experienced.

Impacts from noise are anticipated to be negligible as a result of the implementation of Alternative 1. Existing ranges would still be utilized for firing the same types of weapons systems and conducting the same types of training. Under Alternative 1, however, Fort Polk would have a negligible anticipated reduction in the frequency of noise generating training events. The operations of the JRTC would continue to be the major generator of training related noise. The number of weapons qualifications and maneuver training events could be anticipated to decrease slightly. Noise impacts would likely remain comparable to current conditions. The current frequency of aviation training activities, a contributor of noise at the installation, would not be anticipated to change more than marginally, as aviation units would not be impacted by these decisions.

There would be a negligible impact on the installation and surrounding communities by the addition of up to 1,000 Combat/Combat Support Soldiers. The most prevalent sources of new noise would be from small arms weapons fire and some maneuver; which, when compared to the current training of the JRTC environment, is largely insignificant.

Given that there are no new types of activities that would occur as a result of stationing of these Soldiers, just a slight increase in the types of existing noise generating activities, only minor impacts are anticipated to occur as a result of implementing this alternative. Sensitive wildlife populations would not be impacted by the implementation of Alternative 2. Wildlife in the area is noise-tolerant, having become habituated to noise in the current training environment. Noise from simulated Artillery rounds and .50 caliber blank weapons fire and small arms fire has not been shown to impact RCW nesting or reproductive success, even for those inhabiting direct fire ranges and impact areas (Delaney et. al., 2002).

- ***Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species).*** Historically, most of Fort Polk's natural resource management efforts had focused on single species management, but the overall strategy has shifted to focus on maintenance of natural ecosystem functionality. Fort Polk's INRMP (Fort Polk, 2004) uses an ecosystem management approach, seeking to manage natural resources at a landscape scale with a focus on habitat rather than single-species management. The primary objective is to support the military mission with sustainable and realistic training land, while promoting ecological health and diversity.

  Fort Polk's wildlife species include most animals indigenous to the southwestern Louisiana pinelands region. A total of 224 species of birds, 70 species of reptiles and amphibians, 45 species of mammals, 35 species of fish, 12 species of freshwater mussels, and 13 vegetation community types have been recorded as occurring on the

installation. Fort Pork has one endangered species, the RCW (*Picoidies borealis*) managed under Fort Polk Endangered Species Management Component (ESMC, 2011). One candidate species, the Louisiana Pine Snake (*Pituophis ruthveni*), is being considered for listing under the ESA, but currently receives no federal protection. Fort Polk manages the Louisiana Pine Snake via a Candidate Conservation Agreement with the USFWS, USFS, Texas Parks and Wildlife Department, and the Louisiana Department of Wildlife and Fisheries. The Louisiana Pine Snake is found in both East Texas and Western Louisiana.

Negligible adverse effects would occur at Fort Polk under the No Action Alternative. Fort Polk would continue to adhere to its existing resource management plans and INRMP to further minimize and monitor any potential effects. Units are briefed prior to each training event regarding sensitive areas on-post, such as protected species habitat, and what is and is not allowed within certain areas.

Negligible impacts to biological resources are anticipated as part of the implementation of Alternative 1. Scheduling conflicts for training area access to conduct resource monitoring would be reduced. Proactive conservation management practices and species monitoring would be more easily accomplished with reduced mission throughput. As a result of this alternative, maneuver and live-fire training reductions would decrease the chance for impacts to vegetation and wildlife.

Negligible adverse impacts are anticipated as part of the implementation of Alternative 2. The increase in this number of Soldiers would increase training by less than 10 percent above the current training levels. While this moderate force augmentation would increase maneuver traffic in the training lands and ranges, it would not cause significant degradation or destruction of threatened or endangered species or rare species habitats. Access to training lands and ranges for the purpose of threatened and endangered species monitoring and habitat management would become slightly reduced as natural resource management cannot be conducted during training events. Management hours would increase by Fort Polk staff, however, when access to management areas was possible to compensate for this more limited access. Fort Polk staff would still implement the requirements outlined in natural resource management plans and the ESMC. It is not anticipated that implementation of this level of Soldier growth would have more than negligible impacts on the listed or candidate species found on the installation.

The endangered and candidate species recorded on the installation would continue to be managed in accordance with the installation's INRMP and ESMC, terms and conditions identified within Biological Opinion(s) issued by the USFWS, and any conservation measures identified in ESA, Section 7 consultation documents.

- ***Energy Demand and Generation.*** The existing electrical system on the JRTC and Fort Polk is divided into two distribution systems that serve the two distinct cantonment areas of the installation. Each system is supplied by its own substation, through Entergy electric utility.

The natural gas system at the JRTC and Fort Polk was installed in 1942 and has served the majority of the installation's heating, domestic hot water, and institutional services (cooking, laundry, and the like) and some cooling requirements since its installation. Two commercial gas companies using separate transmission lines provide natural gas to South and North Fort Polk. Current supplies of natural gas are considered adequate based on the fact that the current 8-inch transmission line, which feeds the JRTC and Fort Polk, could deliver in excess of 400,000 thousand cubic feet per year, which far exceeds historic demand levels.

Negligible impacts would result from the No Action Alternative and Alternative 2. As a result of the implementation of Alternative 1, a minor beneficial impact is anticipated. Regardless of the alternative selected, energy would be available to support Fort Polk operations without the need for additional power infrastructure. A reduction in Soldier numbers would decrease energy requirements and usage on-post.

Fort Polk anticipates that the implementation of any of the alternatives would result in negligible impacts for those VECs discussed above. The following provides a discussion of the VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Proposed Action alternatives.

4.16.2 Air Quality

4.16.2.1 Affected Environment

The JRTC and Fort Polk is located in AQCR 106 and 022. The ROI for air quality affected is defined as AQCRs 106 and 022. The JRTC and Fort Polk is primarily in Vernon Parish, with small portions of the post (Peason Ridge Training Area) extending into Sabine and Natchitoches parishes. England Industrial Airpark, Fort Polk's primary departure and return point for deploying units, is located in Rapides Parish (AQCR 106). Air quality in all four parishes meets or exceeds the NAAQS as established by EPA; therefore, these areas are considered attainment areas.

Fort Polk is designated as a major stationary source of air pollutants and operates under a CAA Title V Operating Permit. Under the Title V Operating Permit, permitted stationary sources include gasoline and JP8 (jet fuel) storage, fueling and dispensing facilities, paint booths, generators, boilers, wastewater treatment facilities, degreasing operations, solvent reclamation, munitions detonation, and engine testing.

In addition to stationary sources, air pollutants are generated at the JRTC and Fort Polk by activities such as fugitive dust from training vehicles, exhaust emissions from training vehicles, aircraft engine emissions, decomposition products of propellants, obscurants, pyrotechnics, explosives, and emissions from prescribed burning and wildfires. In 1989, Fort Polk received an exemption for air emissions resulting from fugitive dust from vehicles, smoke from obscurant burning fog oil and decomposition, and in-place detonation of small explosives associated with training exercises conducted within the boundaries of the military reservation and Peason Ridge training. This exemption is still in effect for Fort Polk. Although air quality standards may be exceeded locally at source points within the installation boundary during training events, the events do not cause exceedances or visual obstructions outside JRTC and Fort Polk.

4.16.2.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, there would continue to be negligible short- and long-term fugitive dust and emissions impacts from training and installation operations. These impacts would not exceed threshold levels. Permit conditions would continue to be monitored and met, but no changes to emission sources are anticipated, other than those mandated by maintenance, replacement, or elimination of sources as they age or are removed from service.

Alternative 1: Force Reduction (up to 5,300 Soldiers and Army Civilians)

Alternative 1 would have an anticipated beneficial impact to regional air quality from reduced stationary and mobile emission sources. There would be less combustion and generation of NAAQS pollutants and HAPs associated with military training and less emissions generation by Soldiers and their dependents in the cantonment area. In addition, there would be less fugitive dust generated from fewer training events.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be an anticipated minor impact on air quality in the airsheds surrounding Fort Polk as a result of implementing Alternative 2. There would be an anticipated minor increase in air emissions from both mobile and stationary sources that would be generated to support additional Soldiers and their Families. Fort Polk can anticipate increased emissions from military vehicles, POVs, and generators used to support training events as well as increase in fugitive dust. The increase of up to 1,000 Soldiers and their dependents would have only minor impacts to regional air quality. Fort Polk would not exceed the emissions limits of its Title V permit or to engage in activities causing any change in attainment status or exceedance of NAAQs. Activities that generate air emissions would not qualitatively change though they could be anticipated to increase marginally to support additional Soldiers.

4.16.3 Soil Erosion

4.16.3.1 Affected Environment

Fort Polk is located in the Coastal Plain province and is characterized by a rolling topography, moderately to heavily covered with second-growth timber. Local relief is generally less than 100 feet while the terrain at Peason Ridge (northwest portion of installation) is low, well-rounded hills of less than 500 feet.

Soils on the installation are derived from in-place weathering of underlying rock strata, except in the floodplains of water bodies, where soils consist of alluvial silts and sands. In general, most soils in the study area are highly weathered and acidic and have low fertility. Six predominant soil associations comprise the soils occurring on the installation. The majority of Fort Polk is mantled with a fine-grained silty sand topsoil. The Natural Resources Conservation Service classifies the Fort Polk soils such as the thick layer of sand, clay, and alluvium as highly erodible (USDA, 2002).

Fort Polk has established programs and procedures to minimize soil erosion on its training lands. The following measures are currently implemented installation wide and would be used to maintain and sustain the training lands associated with the Proposed Action. The following describes existing procedures and programs utilized to decrease soil displacement and thereby protect waterways from sedimentation.

- ***Installation Training Area Management Program.*** The JRTC and Fort Polk's ITAM program and the LRAM program are used to identify and repair land that requires rehabilitation.
- ***Maneuver Damage Inspection and Monitoring.*** The JRTC and Fort Polk's maneuver damage inspection and repair program is being expanded to include identification, repair, and monitoring for damages from routine home station training events. All training lands would be inspected for maneuver damage to soils, vegetation, streams and wetlands, and sensitive environmental resources following each training exercise, and corrective actions would be initiated.
- ***Annual Maintenance of Sediment Basins.*** All sediment basins would be inspected to ensure that they are functioning properly. Basin maintenance would be prioritized according to need. Excess sediment would be removed from basins, applied to upland areas, and stabilized.
- ***Temporary Closure of Sites.*** Maneuver damage inspectors would identify sites on the installation needing protection to facilitate recovery from maneuver damage to soils, vegetation, streams and wetlands, and sensitive environmental resources. Sites would

be marked as temporarily off-limits to digging and driving until the sites are recovered. Closed areas would be added quarterly or as needed to the "No Dig/No Drive" map used to help military trainers for planning purposes.

- ***Integration of Maneuver Damage Inspection and Repair into Annual Training Calendar.*** Sufficient time on the Annual Training Calendar would be scheduled for maneuver damage inspection and repair following all training events. Updated protocols for scheduling of maneuver damage inspections, repairs, and other resource management needs on Army lands would be incorporated into JRTC and Fort Polk Regulation 350-10. These protocols would provide enhanced opportunities for damage inspection, corrective actions, and monitoring.
- ***Scheduling of Non-Training Activities.*** Non-training activities such as LRAM; prescribed burning, forest thinning and other forest management activities; and maneuver damage repair would be scheduled at the monthly Resource Allocation Conferences. This would ensure that damage repair and forest management would receive top priority during the Green Period (14 uninterrupted days each quarter during which environmental management and stewardship measures are given priority on land utilization) and that restoration and maintenance activities would occur according to schedule. Changes to the existing installation protocols for scheduling of non-training activities would be incorporated into JRTC and Fort Polk Regulation 350.

4.16.3.2 Environmental Consequences

No Action Alternative

Minor adverse impacts are anticipated under the No Action Alternative. Fort Polk would continue its infantry and mechanized training, to include impacts to soils from removal of or damage to vegetation, digging activities, ground disturbance from vehicles, and ammunition or explosives used in training events. The installation's ITAM program conducts monitoring, rehabilitation, and maintenance and repair on areas of high use such as drop zones, artillery firing positions, observation points, and ranges.

Alternative 1: Force Reduction (up to 5,300 Soldiers and Army Civilians)

Impacts from soil erosion are anticipated to be negligible as a result of the implementation of Alternative 1. Alternative 1 includes the reduction of no-longer-needed facilities that could result in short-term adverse impacts from demolition and temporary exposure of bare soils to rain and water and wind erosion; however, these impacts would be short term in duration. Overall, there would be anticipated negligible long-term impacts from reduced training and more opportunities for land rehabilitation and natural rest and recovery of the landscape. It is anticipated that there would be less soil erosion and sedimentation attributable to training activities. With the continued implementation of the above programs short- and long-term negligible adverse impacts to soils are anticipated. A decrease in foot and vehicular traffic would result in minimal beneficial impacts to areas along roadways and trails on the installation. As a result of the implementation of Alternative 1, off-road movement would not impact soil erodibility based on disturbance to vegetation and soil surfaces, and rainfall intensity.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

With the continued implementation of the above programs short- and long-term minor adverse impacts to soils are anticipated. Training of additional Soldiers and units would occur in Fort Polk's existing training areas. The stationing of additional Soldiers at Fort Polk would result in only a slight increase in maneuver training, as a majority of maneuver training and soils impacts

are caused by the JRTC unit training. Fort Polk would continue to implement the ITAM program and its environmental programs to protect soils. Impacts to soils would therefore be minor.

4.16.4 Wetlands

4.16.4.1 Affected Environment

Wetlands occurring on Fort Polk can be associated with palustrine forested wetlands or bottomlands not capable of supporting pine dominated forests. Wetlands also consist of freshwater bogs, baygalls, and swamps. For most of the year, bogs are saturated and they exist in locations where the water table is near the surface.

In addition to pitcher plant bogs, surface water and wetland areas on Fort Polk include 100 acres of manmade impoundments, 50 acres of beaver ponds, and 8,800 acres of riparian areas. Together, wetlands make up about 6.5 percent of Fort Polk and are typically widely scattered (Fort Polk, 2004).

4.16.4.2 Environmental Consequences

No Action Alternative

Negligible adverse impacts would continue. Fort Polk would continue monitoring its wetlands and sediment basins to contain soil erosion and potential degradation of wetland function caused by training. Fort Polk would continue to rest and recover heavily used training areas to limit sedimentation impacts to wetlands and surface waters, and Fort Polk would continue to monitor its wetlands areas.

Alternative 1: Force Reduction (up to 5,300 Soldiers and Army Civilians)

Impacts from soil erosion are anticipated to be negligible and potentially beneficial. Alternative 1 includes the reduction of no longer needed facilities that could result in short-term adverse impacts from demolition and temporary exposure of bare soils to rain and water and wind erosion; however, these impacts would be short term in duration. Overall, there would be anticipated negligible long-term impacts from reduced training and more opportunities for land rehabilitation and natural rest and recovery of the landscape. It is anticipated that there would be less soil erosion and sedimentation attributable to training activities; however, these effects would be negligible, as the JRTC uses most of the land at Fort Polk for much of the year, and its operations would continue at a high operations tempo.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There is anticipated to be short- and long-term minor adverse impacts on wetlands. The installation would continue to implement programs to limit the potential for impacts to wetlands to include avoidance of wetland areas as part of installation range operations. Additional training activities would have minor impacts on wetland areas which could experience limited increased impacts from sedimentation and maneuver training.

4.16.5 Water Resources

4.16.5.1 Affected Environment

***Watersheds*.** The main post lies within three major watersheds: the Lower Sabine River basin, Whiskey-Chitto River basin, and Upper Calcasieu River basin. Three watersheds, the Lower Sabine, the Upper Calcasieu, and the Lower Red-Lake, contain water bodies listed as impaired in 2002. TMDLs would be established for the pollutants of concern within these impaired water bodies.

The headwaters of many streams lie within the installation's boundaries. Five streams are either headwaters or tributaries to streams or rivers designated under the Natural and Scenic River System and are located within the watersheds of the JRTC and Fort Polk military installation.

***Groundwater*.** Groundwater is the principal source of drinking water for the JRTC and Fort Polk and Vernon Parish. The Williamson Creek, Carnahan, and Evangeline aquifers support water supply wells in the area of the JRTC and Fort Polk. The Evangeline aquifer is also the source of groundwater to the public-supply wells for the Town of Pitkin, 5 miles south of the installation, and to domestic wells in the southern part of Vernon Parish. The Williamson Creek aquifer is the source of groundwater for public supply wells in the Town of Pickering. The Carnahan Bayou aquifer is also a source of groundwater for public supply wells in the towns of Leesville and Simpson.

***Water Supply*.** Water for South Fort Polk is supplied entirely by wells situated throughout the South Fort Polk area. These wells have a combined maximum capacity of approximately 7.8 mgd. A sustainable daily yield for these water wells is approximately 5.2 mgd. The South Fort Polk distribution system is generally in good condition and can be anticipated to provide sufficient quantities and pressures for domestic and fire flow requirements under baseline and projected populations.

Water for North Fort Polk is supplied entirely by wells situated throughout the North Fort Polk area. These wells have a combined maximum capacity of approximately 4.2 mgd. A sustainable daily yield for these water wells is approximately 3.5 mgd. The North Fort Polk distribution system is also in good condition and can be anticipated to provide sufficient quantities and pressures for domestic and fire flow requirements under baseline and projected populations.

In total, Fort Polk uses less than 1.5 mgd, and has plenty of water availability from its wells to support current and increased levels of Soldier stationing.

***Wastewater*.** The JRTC and Fort Polk operates two WWTPs: the North Fort WWTP, with a design flow of 1.4 mgd, and the South Fort WWTP, with a design flow of 3.8 mgd. The JRTC and Fort Polk also operates three other wastewater treatment systems (Peason Ridge, Toledo Bend, and the Landfarm Pond). Each of these systems is relatively small and has design flows of less than 25,000 gpd.

The average daily combined wastewater discharge from both the North Fort WWTP and the South Fort WWTP has ranged from just below 2 mgd in 1995, to 3.5 mgd in 1992. Since 1992, the amount of wastewater discharged from the installation has declined significantly, primarily because of a decrease in population of more than 17,000 people and a decrease of approximately 1 million square feet in real property resulting from the transfer of the 5th Infantry Division from Fort Polk to Fort Hood. Average daily discharges in 2000 at the North Fort WWTP and the South Fort WWTP were 0.344 mgd and 1.74 mgd, respectively.

The Peason Ridge Sanitary Sewage Treatment Facility supports the sanitary sewage treatment requirements of the Peason Ridge Cantonment Area and the JRTC at the Peason Ridge Training Area. The treatment facility is a lagoon system capable of processing 2,400 gpd of sewage and a peak flow of 3.0 gpm.

***Stormwater*.** Industrial activities, including such transportation-related activities as vehicle maintenance, fueling, and washing, are currently permitted under the NPDES Industrial Activities permit program. The installation also obtains permits for construction activities disturbing more than 1 acre. Fort Polk also has permit coverage for its MS4.

4.16.5.2 Environmental Consequences

No Action Alternative

The No Action Alternative would have negligible adverse effects to water resources. No change from existing conditions would occur and all construction, operation, and maintenance projects already under way have obtained the NPDES permit and other applicable permits and are operating in adherence to their guidance. Training activities would continue as would environmental management activities with minimal adverse impacts to surface waters.

Alternative 1: Force Reduction (up to 5,300 Soldiers and Army Civilians)

Minor beneficial impacts are anticipated as part of the implementation of Alternative 1. A loss of up to 5,300 Soldiers and Army civilian employees would reduce training area use, and decrease the chance of potential surface water impacts. The demand for potable water would also be diminished, and implementation of Alternative 1 would create additional treated wastewater capacity for other uses at the installation. Water demands and wastewater treatment would decrease, but Fort Polk's water supply and water and wastewater infrastructure capacities would remain adequate. The decrease in wastewater generation could potentially negatively affect Fort Polk's WWTP due to the reduction of wastewater volumes and lack of adequate influx of wastewater to maintain transmission lines and treatment. This issue would require further study if Alternative 1 were selected at Fort Polk to determine the impacts to the WWTPs.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Overall, minor impacts are anticipated as part of the implementation of Alternative 2. Any new construction and land disturbance over 1 acre would require a stormwater construction permit, which would entail identification and implementation of mitigation strategies to reduce impacts associated with stormwater runoff during and after construction. Based on the average of 100 gpd of potable water use per person it is anticipated that 1,000 additional Soldiers would increase potable water demand by approximately 100,000 gpd. Dependents accompanying these Soldiers could increase water demand by an additional estimated 152,000 gpd, though some dependents would live off post where water would come from other sources. The demand created by this increase in personnel is easily met and would not adversely impact Fort Polk's water supply. Fort Polk currently has plenty of extra capacity, with regard to potable water, to accommodate the increase of Soldiers and dependents. Based on an average daily use of 109 gpd per person, it is anticipated that wastewater would increase by 109,000 gpd, well within the permitted limits and capacity of the WWTPs, even when considering the potential increase in the numbers of Family members and dependents, who could add another 166,000 gpd in treatment requirements to the total amount of wastewater requiring treatment on Fort Polk.

4.16.6 Facilities

4.16.6.1 Affected Environment

The JRTC and Fort Polk consists of three general land use categories: the cantonment area, training areas, and impact areas. The cantonment area of Fort Polk consists of about 8,050 acres in the western portion of the installation and consists of administration, billeting, and Family housing areas. It has been developed into a wide variety of land uses that comprise the elements necessary for a complete community. This includes the installation Post Exchange, commissary, housing and Family support services, medical, and mission-support facilities.

4.16.6.2 Environmental Consequences

No Action Alternative

Impacts to facilities would be negligible under the No Action Alternative. The installation would continue to utilize its existing facilities to meet the needs of its Soldiers.

Alternative 1: Force Reduction (up to 5,300 Soldiers and Army Civilians)

Minor beneficial impacts are anticipated as a result of the implementation of Alternative 1. An increase in the FRP and facilities demolition at Fort Polk would occur as a result of this alternative. Older, less-efficient facilities nearing the end of their life-cycle would be demolished when no longer needed to support Soldiers or their Families and would allow the Army to save on maintenance and energy requirements. Facility usage and availability would increase for the installation's remaining population, allowing some facilities to be re-used and some units to obtain better permanent facilities to meet their needs.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be less than significant impacts to facilities as a result of the implementation of Alternative 2. Increased Soldier strength of up to 1,000 Soldiers would be reflected through increased usage throughout the cantonment area. Although the total number of facilities available meets Fort Polk's requirements, many unit operations facilities are outdated and smaller than the standard facilities authorization for Army units. If new facilities were not constructed for additional units stationed at Fort Polk, existing facilities could be provided, but these would be smaller and older buildings. Activities within the training and range areas would be limited to existing firing ranges, maneuver areas, and roadways.

The impacts of the Proposed Action and other alternatives on utilities and communications would not exceed the capacity of the installations current infrastructure.

4.16.7 Socioeconomics

4.16.7.1 Affected Environment

Fort Polk main post is located in Vernon Parish, approximately 7 miles east of Leesville, Louisiana and 20 miles north of DeRidder, Louisiana. Peason Ridge is located in Sabine, Natchitoches, and Vernon parishes. The ROI is the area that the demographic, economic, and social effects of the Proposed Action are most likely to influence. The ROI includes nearby trade and service centers related both directly and indirectly to the economic activities of the JRTC and Fort Polk. It takes into account the residency distribution of the JRTC and Fort Polk military and civilian personnel, as well as the parishes within commuting distance of the post and use of lands by the JRTC and Fort Polk for training and deployment. For purposes of this analysis, the ROI consists of Beauregard, Natchitoches, Rapides, Sabine, and Vernon parishes.

Population and Demographics. The Fort Polk population is measured in three different ways. The daily working population is 10,836, and consists of full-time Soldiers and government Army civilian employees working on post. The population that lives on Fort Polk consists of 3,298 Soldiers and 6,847 dependents, for an estimated total on-post resident population of 10,145. Finally, the portion of the ROI population related to Fort Polk is 18,996 and consists of Soldiers, civilian employees, and their dependents living off post.

Population data from the U.S. Census Bureau (U.S. Census, 2010) were used to determine current population numbers for the ROI for Fort Polk. Table 4.16-3 provides a summary of the demographic characteristics of Beauregard, Natchitoches, Rapides, Sabine, and Vernon parishes in Louisiana. The ROI parish population is over 284,000. Compared to 2000, the 2010

population increased in Beauregard, Rapides, and Sabine parishes, and the State of Louisiana. Population decreased in Natchitoches and Vernon parishes (Table 4.16-3). The racial and ethnic composition of the ROI is presented in Table 4.16-4.

Table 4.16-3. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Louisiana	4,600,000	+ 0.9
Beauregard	36,000	+ 1.3
Rapides	132,000	+ 0.6
Natchitoches	40,000	- 0.3
Sabine	24,000	+ 1.2
Vernon	52,000	- 0.4

Table 4.16-4. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	American Indian (Percent)	Asian (Percent)	Hispanic (Percent)	Two or More Races (Percent)
Louisiana	60	32	4	1	4	1
Beauregard	80	14	1	1	3	2
Rapides	62	32	1	1	3	1
Natchitoches	54	42	0	1	2	1
Sabine	69	17	9	0	3	2
Vernon	71	15	2	2	8	2

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased the State of Louisiana and Beauregard, Rapides, Natchitoches, and Vernon parishes. Employment decreased in Sabine Parish (Table 4.16-5). Employment, median home value and household income, and poverty levels are presented in Table 4.16-5.

Table 4.16-5. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
Louisiana	1,639,104	+ 2.9	130,000	43,445	18.1
Beauregard	6,877	+ 4.9	83,400	45,202	13.2
Rapides	49,277	+ 2.1	110,500	40,658	18.1
Natchitoches	10,631	+ 4.9	90,500	30,326	28.6
Sabine	4,176	- 8.0	74,600	35,395	20.7
Vernon	8,785	+ 18.8	85,400	42,554	15.0

- **Beauregard Parish**

  According to the U.S. Census Bureau (U.S. Census, 2010) information, 26.9 percent of working residents in Beauregard Parish are in management/professional and related

occupations. Sales and office occupations follow at 21.3 percent (U.S. Census, 2010). Of the working population in Beauregard Parish, construction, extraction, and maintenance occupations employ 21.7 percent; 5.8 percent are in production, transportation, and material moving occupations; and 5.4 percent are in farming, fishing, and forestry occupations. The educational, health, and social services industry employs 20.0 percent of the working population in the study area. The manufacturing industry employs 11.4 percent of the working population. The retail trade industry employs 10.8 percent of the working population. Professional, scientific, management, administrative, and waste management services industries employ 5.8 percent of the working population. The construction industry employs 10.3 percent of the working population and the arts, entertainment, recreation, accommodation, and food services industry employs 7.3 percent. Other services, transportation and warehousing/utilities industries employ 5.8 percent. The remaining 17.4 percent are employed by the wholesale trade; finance and insurance, and real estate and rental and leasing; and information industries.

Major employers in the ROI include Amerisafe, Inc, Ampacet Corporation, Beauregard Electric Co-Op, Inc, Beauregard memorial Hospital, Boise Packaging & Newsprint, Mead Wesvaco Corporation, Merryville Nursing Center, Wal-Mart Supercenter and Westwood Manor (Louisiana Site Selection, 2009).

- **Natchitoches Parish**

Working residents (27.5 percent) in Natchitoches Parish are in management and professional and related occupations. Sales and office occupations follow at 23.3 percent (U.S. Census, 2010). Of the working population in Natchitoches Parish, construction, extraction, and maintenance occupations employ 6.7 percent; 14.8 percent are in production, transportation, and material moving occupations; and 5.9 percent are in farming, fishing, and forestry occupations. The educational, health, and social assistance industry employs 26.5 percent of the working population in the study area. The manufacturing industry employs 12.9 percent of the working population. The retail trade industry employs 12.1 percent of the working population. Professional, scientific, management, administrative, and waste management services industries employ 6.3 percent of the working population. The construction industry employs 6.7 percent of the working population and the arts, entertainment, recreation, accommodation, and food services industry employs 8.3 percent. Other services, transportation and warehousing and utilities industries employ 4.7 percent. The remaining 4.2 percent are employed by the wholesale trade; finance and insurance, and real estate and rental and leasing; and information industries.

Major non-governmental employers in the ROI include Pilgrim's Pride, Roy O Martin, Alliance Compressors, and Natchitoches Regional Medical Center. Government employers include Parish of Natchitoches, Natchitoches Parish School Board and Northwestern State University (Louisiana Site Selection, 2009).

- **Rapides Parish**

Working residents (32.5 percent) in Rapides Parish are in management and professional and related occupations. Sales and office occupations follow at 24.8 percent (U.S. Census, 2010). Of the working population in Rapides Parish, construction, extraction, and maintenance occupations employ 14.6 percent; 11.3 percent are in production, transportation, and material moving occupations; and 3.1 percent are in farming, fishing, and forestry occupations. The educational, health, and social assistance industry employs 30.4 percent of the working population in the study area. The manufacturing industry employs 7.3 percent of the working population. The retail trade industry employs

12.6 percent of the working population. Professional, scientific, management, administrative, and waste management services industries employ 6.9 percent of the working population. The construction industry employs 7.2 percent of the working population and the arts, entertainment, recreation, accommodation, and food services industry employs 6.7 percent. Other services, transportation and warehousing and utilities industries employ 5.0 percent, respectively. The remaining 3.4 percent are employed by the wholesale trade; finance and insurance, and real estate and rental and leasing; and information industries.

Major non-government employers in the ROI include Christus St. Frances Cabrini Hospital, Cleco Corporation, Dresser Consolidated Valves, Gilchrist Construction Company, International Paper, Interstate Bakeries, Procter and Gamble, Rapides Regional Medical Center, Saint Mary's Training Facility and UTLX Manufacturing. Major government employers include City of Alexandria, City of Pineville, Louisiana State University at Alexandria, Pinecrest Supports and Services Center, Rapides Parish School Board and Rapides Parish Sheriff's office (Louisiana Site Selection, 2009).

- **Sabine Parish**

In Sabine Parish, approximately 24.7 percent of working residents in the parish are in management and professional and related occupations. Sales and office occupations follow at 20.1 percent and service occupations at 16.4 percent (U.S. Census, 2010). Of the working population in Sabine Parish, construction, extraction, and maintenance occupations employ 18.1 percent; 17.5 percent are in production, transportation, and material moving occupations; and 15.5 percent are in farming, fishing, and forestry occupations. The educational, health, and social services industry employs 22.3 percent of the working population in the study area. The Public Administration industry employs 4.3 percent of the working population. The retail trade industry employs 10.7 percent of the working population. Professional, scientific, management, administrative, and waste management services industries employ 4.8 percent of the working population. The construction industry employs 7.4 percent of the working population and the arts, entertainment, recreation, accommodation, and food services industry employs 4.8 percent. Other services, manufacturing, transportation and warehousing/utilities industries employ 10.7 percent, 2.2 percent, and 5.1 percent, respectively. The remaining 18.7 percent are employed by the wholesale trade; finance and insurance, and real estate and rental and leasing; and information industries. In 2010, Sabine Parish's unemployment rate (civilian labor force) was 7.9 percent.

Major employers in the ROI include Boise Cascade, Smurfit-Stone Container Corporation, Many Healthcare North, Sabine Bancshares, Sabine Medical Center, and Sabine Retirement and Rehab Center (Louisiana Site Selection, 2009).

- **Vernon Parish**

In Vernon Parish, approximately 27.6 percent of working residents in the parish are in management/professional and related occupations. Sales and office occupations follow at 24.7 percent and service occupations at 19.6 percent (U.S. Census, 2010). Of the working population in Vernon Parish, construction, extraction, and maintenance occupations employ 9.2 percent; 22.3 percent are in production, transportation, and material moving occupations; and 4.8 percent are in farming, fishing, and forestry occupations. The educational, health, and social services industry employs 22.0 percent of the working population in the study area. The public administration industry employs 13.60 percent of the working population. The retail trade industry employs 13.1 percent of the working population. Professional, scientific, management, administrative, and waste management services industries employ 8.2 percent of the working population.

The construction industry employs 8.0 percent of the working population and the arts, entertainment, recreation, accommodation, and food services industry employs 8.2 percent. Other services, manufacturing, transportation and warehousing/utilities industries employ 12.0 percent. The remaining 6.4 percent are employed by the wholesale trade; finance and insurance, and real estate and rental and leasing; and information industries. In 2010, the Vernon Parish's unemployment rate (civilian labor force) was 7.7.

Major employers in the ROI include Fort Polk/JRTC, Vernon Parish School Board, and Wal-Mart Supercenter, Byrd Regional Hospital, Vernon Parish Police Jury, Vernon Parish Sheriff's Dept, Leesville State School, and the City of Leesville (Louisiana Site Selection, 2009).

Fort Polk is the largest employer in west central Louisiana with more than 6,600 civilian employees (to include contractor personnel). Additionally, it is estimated that Fort Polk contributes $1.3 billion to the local area economy each year (Fort Polk Real Property Digest, 2008).

Housing. Fort Polk is participating in the RCI, under which private builders build, own, and manage Family housing on the installation. Fort Polk, under the RCI housing program is authorized a maximum of 3,821 housing units. At any given time, approximately 95 percent of the total number of housing units is available for occupancy. The remaining 5 percent are undergoing renovations to prepare the units for their next occupants. Family housing on Fort Polk is effectively full (Fort Polk, 2010).

Fort Polk has Family quarters totaling 3,578. An estimated 6,847 military Family members reside on post and an estimated 11,297 reside off post. Barracks spaces for unaccompanied personnel total to 4,002. Fort Polk is constructing 240 spaces that would meet these standards. Additionally, 524 barracks spaces have been renovated at Fort Polk to accommodate one Soldier to a one room space.

Schools. Children of military personnel attend school within two parishes in the ROI. Fort Polk accounts for 34 percent of students attending 19 schools in Vernon Parish and 12 percent of the students attend 12 schools in Beauregard Parish. A total of 4,146 military-dependent students attend schools in both parishes; these local schools receive approximately $5,950,000 in federal funding.

Public Health and Safety

Police. The Fort Polk Police Department, a part of the Directorate of Emergency Services, provides law enforcement and property protection at Fort Polk. Police functions include protecting life and property, enforcing criminal law, conducting investigations, regulating traffic, providing crowd control, and performing other public safety duties. City, county, and state police departments provide law enforcement in the ROI.

Fire. The Fort Polk Fire Department, a part of the Directorate of Emergency Services, provides emergency firefighting and rescue services at Fort Polk. Fire prevention is another service provided by the Fort Polk Fire Department. Fire prevention activities include providing fire safety advice and ensuring that structures are equipped with adequate fire precautions to ensure that in the event of fire, people can safely evacuate the premises unharmed.

Medical. Fort Polk supports a range of medical services. The Bayne Jones Army Community Hospital (BJACH) provides healthcare services for military personnel, military dependents, and to military retirees and their dependents. BJACH services include audiology/speech pathology, dermatology, dietetics, emergency services, family medicine, internal medicine, OB/GYN, occupational therapy, ophthalmology, optometry, orthopedics, otolaryngology, pediatrics,

physical therapy, psychiatry, surgery, podiatry, psychology, social work, and substance abuse. Fort Polk also provides dental services and supports a Warrior Transition Battalion.

Family Support Services. The Fort Polk DFMWR and ACS provide programs, activities, facilities, services, and information to support Soldiers and Families. Services provided at Fort Polk include child care, youth programs, deployment readiness for Families, employment readiness, financial readiness, relocation readiness, exceptional family member support, Warrior in Transition support, and survivor outreach.

Recreation Facilities. Fort Polk facilities or programs for recreation include fitness centers, swimming pools, athletic fields, golf course, splash park, recreational shooting range, bowling center, outdoor recreation opportunities, sports teams, and a Warrior Zone.

4.16.7.2 Environmental Consequences

No Action Alternative

The No Action Alternative would result in negligible effects to existing socioeconomic resources. Fort Polk would continue to support operations of the local community and have beneficial economic impact on the region. No additional impacts to housing, public and social services, public schools, public safety, or recreational activities are anticipated.

Alternative 1: Force Reduction (up to 5,300[1] Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of approximately 5,300 Soldier and Army government civilian (military employee) positions, each with an average annual income of $41,830. In addition, this alternative would affect an estimated 2,924 spouses and 5,103 dependent children for a total estimated potential impact to 13,343 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 13,343 military employees and their dependents.

Based on the EIFS analysis, there would be no significant impacts for sales volume or income. There would be significant impacts for employment and population. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.16-6. Table 4.16-7 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.16-6. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	8.90	7.17	5.1	3.43
Economic Contraction Significance Value	- 9.28	- 7.71	- 5.15	- 2.42
Forecast Value	- 4.31	- 4.30	- 7.53	- 4.70

1 Calculations used a number of 5,316 Soldiers and civilians for estimating socioeconomic impacts. This number was derived by assuming the loss of the 4/10 IBCT (roughly 3,450 Soldiers), 30 percent of the installation's other Combat Support Soldiers not associated with the BCT, and up to 15 percent of the civilian workforce. As discussed in Chapter 3, this number is rounded to the nearest hundred personnel when discussing impacts of Alternative 1.

Table 4.16-7. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	$283,806,400	$255,733,300	- 5,893 (Direct) - 928 (Indirect) - 6,821 (Total)	- 13,343
Percent	- 4.31 (Annual Sales)	- 4.30	- 7.53	- 4.70

The total annual loss in direct and indirect sales in the ROI represents an estimated -4.31 percent change from the current total sales volume of $6.58 billion within the ROI. State tax revenues would decrease by approximately $11.35 million as a result of the loss in revenue from sales reductions. Some parishes within the ROI supplement the state sales tax of 4 percent by varying percentages, and these additional local tax revenues would be lost at the parish and local level. Regional income would decrease by 4.30 percent. While approximately 5,300 Soldier and Army government civilian positions would be lost within the ROI, EIFS estimates another 577 military contract service jobs would be lost as a result of the implementation of Alternative 1, and an additional 928 job losses would occur indirectly as a result of reduced demand for goods and services in the ROI. The total estimated reduction in employment would be -6,821 jobs, or a -7.53 percent change in regional non-farm employment. The total number of employed positions (non-farm) in the ROI is estimated to be approximately 90,600. A significant population reduction of 4.70 percent within the ROI is anticipated as a result of this alternative. Of the approximately 284,000 people (including those residing on Fort Polk) that live within the ROI, 13,343 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes civilian and military employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.16-8 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.16-8. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- $180,744,596 (Local) - $319,050,290 (State)	$246,004,278	5,714 (Direct) 494 (Indirect) 6,208 (Total)
Percent	- 2.75	- 4.13	- 6.85

The total annual loss in direct and indirect sales in the ROI represents an estimated -2.75 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 1.56 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales

volume numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately $12.76 million as a result of the loss in revenue from sales reductions, which would be $1.41 million less in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by 4.13 percent, slightly less than the 4.30 percent reduction projected by EIFS. While approximately 5,300 Soldier and Army government civilian positions would be lost within the ROI, RECONS estimates another 398 military contract and service jobs would be lost, and an additional 494 job losses would occur indirectly as a result of reduced demand for goods and services in the ROI. The total estimated reduction in employment would be 6,208 jobs, or a 6.85 percent change in regional employment, which would be 0.68 percentage points less than projected by EIFS.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 1 would lead to a net reduction of economic activity within the ROI that is of a similar order of magnitude.

Population and Demographics. Fort Polk anticipates a substantial reduction in military population throughput as a result of the implementation of Alternative 1.

Housing. Alternative 1 would increase the availability of barracks space for unaccompanied personnel and increase the availability of Family housing on post. Those outcomes would likely decrease the off-post demand for rentals and purchases of housing. Fort Polk anticipates long-term, less than significant adverse economic effects in Leesville and Deridder, and in the smaller communities of the ROI.

Schools. Fort Polk anticipates the potential for significant adverse impacts to the Vernon and Beauregard Parish schools as a result of the implementation of Alternative 1. These school districts have invested in school facilities to support the population growth of Fort Polk that resulted from the 2005 Stationing of the 10th Mountain Division (4/10 BCT) and other Army stationing actions. Adverse impacts are likely for the both parishes resulting from a decrease in student numbers and federal funding which would directly impact local schools within the ROI.

Public Health and Safety. As a result of Alternative 1, the anticipated population decrease at Fort Polk would likely reduce the demand for law enforcement services, fire and emergency services, and medical care services on and off post. Fort Polk anticipates less than significant impacts to public health and safety under the Proposed Action.

Family Support Services. As a result of Alternative 1, Fort Polk anticipates a reduced demand for FMWR and ACS programs on post. The demand for Family support services off post would likely decrease also. Fort Polk anticipates less than significant impacts to Family support services under the Proposed Action.

Recreation Facilities. Use of recreation facilities on post would likely decline as a result of Alternative 1. Fort Polk anticipates that utilization decreases would be minor or moderate.

Environmental Justice. As a result of Alternative 1, Fort Polk anticipates no disproportionate adverse impact to minorities, economically disadvantaged populations, or children. Job losses would likely be felt across the ROI, affecting all income levels and many economic sectors. Beauregard and Vernon parishes have a lower percentage of African American people than the State of Louisiana as a whole. Vernon County, on the other hand, has a higher Hispanic population percentage. Seen from a statewide level, therefore, adverse impacts to Vernon Parish could be seen as having a disproportionate adverse impact on Hispanic people.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Economic Impacts. Alternative 2 would result in the increase of up to 1,000 Soldiers, each with an average annual income of $41,830. In addition, this alternative would affect an estimated 550 spouses and 960 dependent children for a total estimated potential impact to 1,510 dependents. The total population of military employees and their dependents directly affected by Alternative 2 is projected to be 2,510 military employees and their dependents.

Based on the EIFS analysis, there would be no significant impacts for sales volume, income, employment, or population. The range of values that would represent a significant economic impact in accordance with the EIFS model are presented in Table 4.16-9. Table 4.16-10 presents the projected economic impacts to the region for Alternative 2 as assessed by the Army's EIFS model.

Table 4.16-9. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 2

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	8.90	7.17	5.1	3.43
Economic Contraction Significance Value	- 9.28	- 7.71	- 5.15	- 2.42
Forecast Value	0.81	0.81	1.41	0.88

Table 4.16-10. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	$53,387,210	$48,106,340	1,108 (Direct) 175 (Indirect) 1,283 (Total)	2,510
Percent	0.81	0.81	1.41	0.88

The total annual gain in direct and indirect sales in the ROI represents an estimated +0.81 percent change in total sales volume from the current sales volume of $6.58 billion within the ROI. It is estimated that state tax revenues would increase by approximately $2.14 million as a result of the gain in revenue from sales increases. Some parishes within the ROI supplement the state sales tax of 4 percent by varying percentages, and these additional local tax revenues would be gained at the parish and local level. Regional income would increase by 0.81 percent. While 1,000 Soldiers would be gained within the ROI, EIFS estimates another 108 military contract service jobs would be gained, and an additional 175 jobs would be created indirectly as a result of the increase in demand for goods and services in the ROI. The total estimated employment in the ROI would increase by 1,283 jobs, or a 1.41 percent change in regional non-farm employment. The total number of employed positions (military and non-farm private employment) in the ROI is estimated to be approximately 90,500. A population increase of 0.88 percent within the ROI is anticipated as a result of this alternative. Of the approximately 284,000 people (including those residing on Fort Polk) that live within the ROI, 2,510 military employees and their dependents would be begin to reside in the area following the implementation of Alternative 2. This would lead to an increase in demand for housing, and decreased housing availability in the region. This could lead to a slight increase in median

home values. It should be noted that this estimate of population increase includes civilian and military employees and their dependents.

Table 4.16-11 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 2.

Table 4.16-11. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment
Total	$34,000,109 (Local) $60,016,979 (State)	$53,292,523	1,157 (Direct) 212 (Indirect) 1,369 (Total)
Percent	0.52	0.90	1.51

The total annual gain in direct and indirect sales in the region represents an estimated 0.52 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 0.29 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would increase by approximately $2.4 million as a result of the gain in revenue from sales reductions, which would be $260,000 more additional state sales tax revenue that projected by the EIFS model. Regional income is projected by RECONS to increase by 0.90 percent, which is slightly more than that 0.81 percent increase projected by EIFS. While 1,000 Soldiers would be gained within the ROI, RECONS estimates another 157 military contract and service jobs would be gained, and an additional 212 jobs would be created indirectly as a result of increased demand for goods and services in the ROI. The total estimated change in non-farm employment would be a gain of 1,369 jobs, or a +1.51 percent change in regional non-farm employment, which would be 0.1 percentage points more than projected by EIFS.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 2 would lead to a net increase of economic activity within the ROI of a similar magnitude.

Population and Demographics. As a result of the implementation of Alternative 2, Fort Polk anticipates a minor increase in military population throughput.

Housing. Alternative 2 would likely add to the pool of Soldiers that want to live on post. Barracks space for unaccompanied personnel and quarters for Families would be available to a smaller percentage of Soldiers in the total Fort Polk population. As a result, the demand for off-post rentals and purchases of housing would likely increase. Fort Polk anticipates long-term, minor beneficial impacts in Leesville and Deridder, Louisiana, and in the smaller communities of the ROI.

Schools. Fort Polk anticipates the potential for minor impacts to the Vernon and Beauregard Parish schools as a result of Alternative 2. Both school districts have integrated higher numbers of students into their schools due to the stationing of the 4/10th Mountain BCT and other stationing actions in recent years.

Public Health and Safety. As a result of Alternative 2, the anticipated population increase at Fort Polk would likely increase the demand for law enforcement services, fire and emergency services, and medical care services on and off post. Fort Polk anticipates minor impacts to public health and safety under the Proposed Action.

Family Support Services. As a result of Alternative 2, Fort Polk anticipates an increased demand for FMWR and ACS programs on post. The demand for Family support services off post would also likely increase. Fort Polk anticipates minor impacts to Family support services under the Proposed Action.

Recreation Facilities. Use of recreation facilities on post would likely increase as a result of Alternative 2. Fort Polk anticipates that utilization increases would be minor. Some facilities could become crowded and less user-friendly during peak use hours.

Environmental Justice. As a result of Alternative 2, Fort Polk anticipates no disproportionate adverse impact to minorities, economically disadvantaged populations, or children. The impacts of the anticipated growth of Fort Polk would be felt throughout the ROI and across all populations.

4.16.8 Land Use Conflicts and Compatibility

4.16.8.1 Affected Environment

The installation has an access control fence which provides cantonment areas with a secure and continuous, well-delineated, and controlled boundary and separates the cantonment area from Fort Polk's training lands. Two developed areas, North and South Fort, total approximately 6,307 acres on the main post. South Fort Polk is the primary area, consisting of headquarters, support facilities, and an airfield. North Fort Polk consists of both temporary and permanent structures.

Land use at the JRTC and Fort Polk is divided into eight categories. In general, the installation land use plan functions appropriately, separating land uses that often conflict. Because of this, the installation benefits with continuous land use units bordering appropriate categories of differing land uses. Overall, land use at the JRTC and Fort Polk is not fragmented.

An artillery range impact area covers most of the eastern to central portion of Fort Polk main post. Zion Hills Small Arms Impact Area is located in the Southwestern part of the main post. Peason Ridge training area lies northwest of the main post. This area is divided into six sections. A third cantonment area lies on the east side of Peason Ridge, and the north-central region of Peason Ridge is an impact area.

Section 4.16.1 describes the land ownership occurring on Fort Polk. Those lands permitted to the Army by the USFS have allowable training activities permitted in the Special Use Agreement and Operating Plan. Numerous training activities, (e.g., mounted and dismounted maneuvers, vehicle convey and airborne operations and others), occurs within the IUA, LUA, and SLUA on Fort Polk Table 4.16-12 contains the land use types, total acreages of land areas, and the corresponding land use requirements on Fort Polk.

Table 4.16-12. Land Use at Fort Polk

Land Ownership	Total Training Land Acreage	Total Range and Impact Area	Total Maneuver Area	Total Unusable Acreage	Available Maneuver Acreage with Surface Danger Zones	Available Maneuver Acreage without Surface Danger Zones
Army owned	91,049[1]	62,269	28,780	6,938	21,842	78,646
Forest Service owned	98,125[2]	33,572	64,553	49,835	14,718	24,664[3]
Total	189,174	95,841	93,333	56,773	36,560	103,310

Source: Fort Polk, 2005

[1]Does not include 8,050 acres in the cantonment area, 442 acres of leased lands, 387 acres in easements, 24.31 acres at Toledo Bend Recreation site, or 56.79 acres in railroad right-of-ways; total Army fee-owned land is 100,009.1 acres.

[2]Includes 40,026 acres of Intensive Use, 44,799 acres of Limited Use, and 12,820 acres of Special Limited Use Land.

[3]42,901 acres of Limited and Special Limited Use Lands are considered unusable for training.

4.16.8.2 Environmental Consequences

No Action Alternative

No changes to land use conditions would occur and no effects are anticipated under the No Action Alternative.

Alternative 1: Force Reduction (up to 5,300 Soldiers and Army Civilians)

There would be negligible short and long-term impacts on installation land use due to the loss of Soldiers. The installation would continue to have sufficient vacant space in buildings that would be suitable for other units' mission and administrative requirements. The land use at the installation would not be affected by the loss of these Soldiers since the land use categories and compatibility would continue to exist and be utilized.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be minor impacts, from land use conflicts and compatibility anticipated. Up to 1,000 additional Soldiers would require the additional use of training areas and qualification ranges. These uses would not exceed an increase in use of more than 10 percent of the current usage levels. Increased use of live-fire ranges by new units could preclude the use of maneuver areas for training by other units that would not be accessible for safety reasons. This would require the need for increased balancing of the scheduling of maneuver and live-fire training activities. There would be negligible short and long-term impacts on installation land use due to the increase of up to 1,000 Soldiers and their Family members assigned to the installation. The installation has sufficient vacant space in buildings that would be suitable for supporting the units' mission. Additionally, the land and existing facilities are located in such a way that additional facilities could be built to support additional Soldiers if funding for new facilities were to become available.

4.16.9 Hazardous Materials and Hazardous Waste

4.16.9.1 Affected Environment

The affected environment for the Proposed Action includes the use, storage, transport, and disposal of hazardous materials and waste at Fort Polk. This includes hazardous materials and waste from USTs and ASTs, pesticides, LBP, asbestos, PCBs, radon, and UXO.

Common hazardous materials present at the installation include POLs; paint and paint-related material from paint shops and motorpools; flammable stains and coatings; cleaning products; photographic wastes; batteries; pesticides, insecticides, rodenticides, and herbicides; bomb propellants; smoke pots; flammable adhesives; solvents; calcium hypochlorite; and nonexpended ammunition. Hazardous waste streams generated at the installation include the above-mentioned items in addition to lead-contaminated paint chips and debris and gasoline-contaminated rags, soil, or used Drysweep. Nonregulated wastes include oil-, fuel-, and grease-contaminated rags and debris; all petroleum-contaminated soil and used Drysweep; grease; used oil; oil and fuel filters; used antifreeze; brake and transmission fluid; asbestos; and nonflammable adhesives (JRTC, 2004).

The installation is a large-quantity generator of hazardous wastes. Hazardous materials and waste are primarily managed by the Environmental and Natural Resources Management Division. The Environmental and Natural Resources Management Division publishes a HWMP and an Oil and Hazardous Substances Contingency Plan. These documents provide SOPs for the collection, storage, transport, and disposal of hazardous materials and waste (JRTC, 2004).

4.16.9.2 Environmental Consequences

No Action Alternative

Overall, negligible effects are anticipated under the No Action Alternative. There would be no change in Fort Polk's management of hazardous materials, toxic substances, hazardous waste, or contaminated sites. Fort Polk would continue to manage existing sources of hazardous waste in accordance with the HWMP.

Alternative 1: Force Reduction (up to 5,300 Soldiers and Army Civilians)

Minor impacts are anticipated as a result of the implementation of Alternative 1. In the short term, there would be an increase in the demolition of outdated and no longer needed facilities. This would increase the volume of solid waste generated, though the waste generated would not exceed the capacity of the installations waste handling systems. An increase in asbestos and LBP disposal would be anticipated until facility reduction was completed as a result of this alternative. Construction workers and Army personnel would take measures to dispose of materials in accordance with regulatory requirements and installation HWMP.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Minor impacts from hazardous materials and waste would occur with an increased Soldier strength of 1,000. The storage, use, handling, and disposal of hazardous materials, toxic substances, and hazardous wastes would not increase the risk to human health or environmental contamination. The implementation of Alternative 2 would not be expected to result in any increased violations of applicable federal, state, local, or DoD regulations. Existing management procedures, regulations, plans, and permits would be used to minimize risk.

4.16.10 Traffic and Transportation

4.16.10.1 Affected Environment

Fort Polk is located in west central Louisiana, approximately 125 miles west, northwest of Baton Rouge, Louisiana and 90 miles north of the Gulf of Mexico. The ROI evaluated for traffic and transportation includes Fort Polk and the parishes of Beauregard, Natchitoches, Rapides, Sabine and Vernon in Louisiana.

Access to the cantonment area is by U.S. Route 171, LA Highway 10, and State Highway LA-28. U.S. Route 171 is a principal rural arterial linking Shreveport, 110 miles to the north, with Lake Charles 70 miles to the south. State Highway LA-28 is an east-west running primary rural arterial linking Leesville to Alexandria and points east. The City of Leesville and Town of New Llano are the population centers nearest to Fort Polk. Leesville and New Llano are adjacent to each other, generally located about 10 miles northwest of the cantonment area. Leesville, DeRidder, and New Llano provide the only shopping, dining, and entertainment within a 25-mile radius of Fort Polk.

4.16.10.2 Environmental Consequences

No Action Alternative

Negligible impacts are anticipated under the No Action Alternative. Surveys and studies conducted on the existing transportation system determined that it is sufficient to support the current traffic load.

Alternative 1: Force Reduction (up to 5,300 Soldiers and Army Civilians)

Beneficial traffic impacts resulting from a reduction in force at Fort Polk would be anticipated as a result of the implementation of Alternative 1. It is anticipated that traffic congestion would diminish in and around key ACPs and entrance gates. The roads would continue to be maintained at acceptable LOS for on- and off-post commuters, and LOS would improve slightly as traffic volume decreased. The Fort Polk traffic system is currently providing acceptable LOS for Fort Polk's Soldiers, their Family members and civilian employees.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be minor, short and long-term impacts on traffic on the installation due to the presence of an additional 1,000 Soldiers and their dependents. The increase in off-post traffic would have a minimal impact on traffic in the community overall. The implementation of the alternative would not contribute to a decrease in the LOS of the road network leading to the installation, particularly during peak morning and afternoon travel periods. This increase in population would also have a minor impact on the traffic volume on the installation on some of the installation's main and arterial routes. The Fort Polk transportation system has the capacity to accommodate additional Soldier and dependent growth with minimal impacts to traffic, however.

4.16.11 Cumulative Effects

Region of Influence

The ROI for this cumulative impact analysis of Army 2020 realignment at Fort Polk encompasses Beauregard, Natchitoches, Rapides, Sabine and Vernon Parishes in Louisiana.

Alexandria, Deridder, Leesville, Natchitoches are the largest cities within the ROI. Fort Polk has long been a key component of the state's economy employing several thousand Soldiers and

civilian employees within the ROI. Fort Polk has been in operation and supporting the Army since early 1940s.

There are numerous planned or proposed actions within the ROI that have the potential to cumulatively add impacts to Army Force 2020 alternatives. These actions are either in progress or reasonably could be initiated within the next 5 years. A number of the Army's proposed projects have been previously identified in the installation's Real Property Master Planning Board and are programmed for future execution. A list of projects below presents some of the projects which may add to the cumulative impacts of the implementation of Army 2020 realignment alternatives.

Fort Polk Projects (Past, Present, and Reasonably Foreseeable)

Past Projects

- Construction of the Digital MPRC;
- Permanent Stationing of the 4/10;
- Construction of the Combined Arms Training Facility;
- Construction of the Corrosion Prevention Facility;
- Construction of the FY 2010 Multi-Purpose Machine Gun Range;
- Construction and Operation of a Drop Zone Expansion; and
- Construction and Operation of a Consolidated Fuel Facility.

Present Projects

- Construction of the FY 2012 Multi-Purpose Machine Gun Range;
- Land Acquisition Purchase; and
- Commercial Forestry Operations.

Future Projects

- Future Land Acquisition purchases and training land preparation project; and
- Ongoing commercial forestry operations.

Other Agency (DoD and non-DoD) and Other Public/Private Actions (Past, Present, and Reasonably Foreseeable)

- Four segments of LA-28 totaling 23 miles have been modified to four-lanes;
- Widening of several segments of State Highway LA-28 (the major arterial between Alexandria and Leesville);
- Currently undergoing a 9.9 mile section from the west junction of State Highway LA-121 to the junction of State Highway LA-465, and another 4.3 mile section from there to the Rapides/Vernon Parish Line;
- State of Louisiana Regional Growth Management Strategy investment of $25 million for utility and arterial construction;
- Privatization of Natural Gas;
- West-Central Ecosystem Partnership for conservation of longleaf pine ecosystems; and
- ACUB.

Fort Polk anticipates a range of cumulative effects resulting from the implementation of the Proposed Action and alternatives. Cumulative impacts for each alternative are as follows:

No Action Alternative

Negligible cumulative impact would be anticipated from implementing the No Action Alternative. Under the No Action Alternative, no changes in military authorizations, or local environmental conditions would be anticipated. Installation facility shortages and excesses would remain at their currently planned levels without additional stationing or force reductions. Traffic conditions would improve slightly with the future completion of state highway projects and other traffic improvements. The Army would continue to implement some facilities reductions of outdated/unused facilities.

Alternative 1: Force Reduction (up to 5,300 Soldiers and Army Civilians)

As a result of Alternative 1, the Army anticipates beneficial to minor adverse cumulative impacts to air quality, water resources, Energy demand/generation, hazardous materials and waste. The reduction of Soldiers at Fort Polk would result in less training and a reduced frequency of garrison support activities. When viewed in conjunction with other past, present, and reasonably foreseeable projects, the overall cumulative effect of Alternative 1 are projected to be minor, with cumulative beneficial impacts to some resources.

The cumulative socio-economic impact within the ROI under Alternative 1 would be a significant adverse impact. Regionally, off-post unemployment has risen within the ROI from 2008 to 2012. Reductions in federal employment by the Army would be partially off-set by employment of the Louisiana Department of Transportation as part of efforts to make state highway improvements. However, the Army and Fort Polk are among the top employers in the state of Louisiana and are the top employers in the ROI. Cumulatively, socioeconomic impacts would be significant within the ROI.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Cumulatively, in conjunction with Alternative 2 the Army anticipates no more than minor impacts to the following VEC resources: airspace, cultural resources, noise, soil erosion, water resources, facilities, socioeconomics, energy demand and generation, land use, hazardous materials and hazardous wastes, and traffic and transportation. A less than significant adverse cumulative impact is anticipated to air quality as state highway improvements, construction, and preparation of Fort Polk's training lands currently being acquired would add to NAAQS pollutant emissions in the future and emit more O_3, PM, and fugitive dust, throughout the airshed. Cumulatively, less than significant impacts would be expected and the region would be projected to remain in attainment for these CAPs. State highway projects in conjunction with the implementation of Alternative 2 and training land improvements would have minor cumulative impacts on biological resources and wetlands. These actions would not result in unpermitted destruction of wetlands without appropriate mitigation. Fort Polk would continue to implement natural resource management plans to mitigate impacts to biological resources when improving newly acquired training areas.

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4.17 FORT RILEY, KANSAS

4.17.1 Introduction

Fort Riley is a permanent Army garrison that currently supports the 1st Infantry Division. The garrison's basic function is to ensure that the 1st Infantry Division and other units have the training resources and facilities needed to meet their mission requirements.

The focus of the 1st Infantry Division is to deploy, conduct full spectrum operations as part of a Combined Joint Task Force or other designated force headquarters, transition to follow-on operations, and to redeploy as necessary.

The Division Headquarters and Headquarters Battalion located at Fort Riley supports the 1st Infantry Division. Fort Riley is home to three BCTs: 1st Brigade, 1st Infantry Division; 2nd Brigade, 1st Infantry Division; and 4th Brigade, 1st Infantry Division; as well as the 1st SUSBDE, 1st Infantry Division; the CAB, 1st Infantry Division; and other units. These organizations conduct most of their training at Fort Riley.

Located in Central Kansas, Fort Riley has approximately 70,000 acres of maneuver area suited for vehicular and non-vehicular military training (Figure 4.17-1). The installation is surrounded by Clay, Dickinson, Riley, and Geary counties. Fort Riley has long supported live-fire and mechanized unit training.

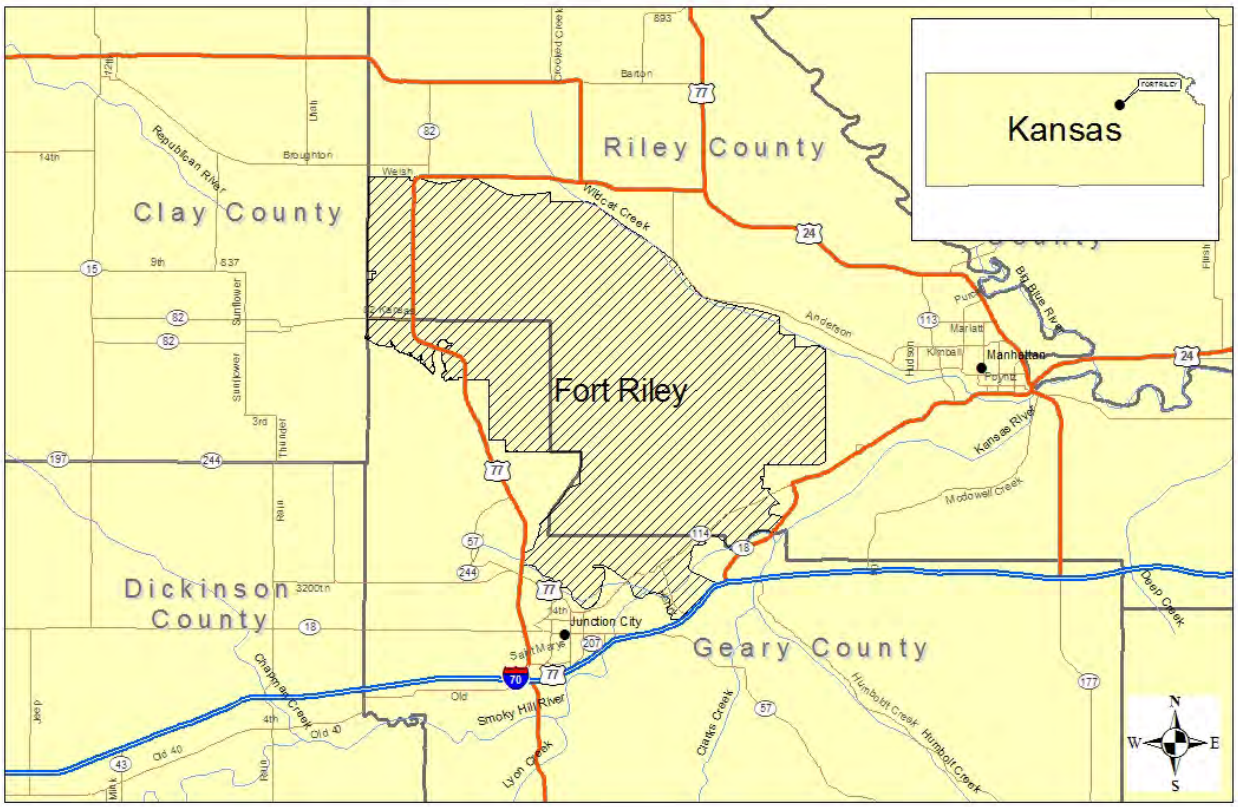

Figure 4.17-1. Fort Riley

4.17.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Riley does not anticipate any significant adverse environmental impacts as a result of the implementation of Alternative 1 (Force reduction of up to 8,000 Soldiers and Army Civilians) or Alternative 2 (Installation gain of up to 3,000 Soldiers). However, significant socioeconomic impacts to economic activities, housing, and school districts are anticipated as a result of Alternative 1. Table 4.17-1 summarizes the anticipated impacts to VECs from each alternative.

Table 4.17-1. Fort Riley Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 8,000	Alternative 2: Growth of up to 3,000
Air Quality	Minor	Beneficial	Minor
Airspace	Negligible	Negligible	Minor
Cultural Resources	Negligible	Minor	Minor
Noise	Negligible	Beneficial	Minor
Soil Erosion	Minor	Minor	Minor
Biological Resources	Negligible	Beneficial	Minor
Wetlands	Negligible	Negligible	Negligible
Water Resources	Minor	Beneficial	Minor
Facilities	Negligible	Minor	Minor
Socioeconomics	Beneficial	Significant	Significant
Energy Demand and Generation	Negligible	Beneficial	Minor
Land Use Conflict and Compatibility	Negligible	Negligible	Negligible
Hazardous Materials and Hazardous Waste	Negligible	Minor	Negligible
Traffic and Transportation	Negligible	Beneficial	Minor

4.17.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section below, no more than a beneficial or negligible impact would be anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- ***Wetlands.*** Wetland areas on Fort Riley include springs, seeps, streams, rivers, ponds, lakes, vernal pools and emergent marshes. Approximately 1,536 acres of wetlands are present on the installation according to a NWI completed in 1991 by the USFWS. Of this total, 972 acres are considered permanent wetlands. The majority of all wetlands are riverine; riverine habitat comprises 144.8 miles and encompasses 748 acres. Lacustrine and palustrine wetlands cover 431 and 270 acres of the installation, respectively (Fort Riley, 2010).

  There would be a negligible impact on installation wetlands. Training activities would be limited to established training areas. Efforts would be made to avoid any impacts on

wetlands by using the installations wetland planning level surveys and geographic information system (GIS) mapping. The potential exists for military training to impact wetlands, but those impacts would not be anticipated to be more than temporary, resulting primarily from sedimentation impacting wetland function. Fort Riley range and environmental personnel would continue to coordinate with one another to avoid and minimize wetland impacts. Most wetlands areas are designated off-limits. If it appears that wetland impacts are unavoidable, the appropriate level of permitting and mitigation would be obtained prior to any construction or demolition.

- ***Land Use Conflicts and Compatibility.*** Land use on the installation has been categorized into twelve general types: training ranges, open space, Family housing, outdoor recreation, maintenance, airfield, supply storage, community facility, industrial, unaccompanied personnel housing, administration, and medical. Training ranges are the predominant land use at Fort Riley, with almost 90,000 acres, or approximately 90 percent of the installation reserved for training and range activities. Training areas encompass much of the cantonment area, and extend throughout the entire north portion of the installation. Training areas within the cantonment area are used for instruction and academics as well as indoor firing ranges, and necessary ancillary facilities associated with training. Training areas outside the cantonment area are typically firing ranges and impact areas. Open space is unoccupied land that provides transition areas between land uses, as well as a buffer between the installation and areas off post. These areas are found throughout the installation. Family housing areas are areas with residential units occupied by enlisted and officer Families. Outdoor recreation areas provide outdoor athletic and recreation facilities for a variety of interests, including natural resources and cultural values. Maintenance areas include facilities and shops that are for the maintenance and repair of Army equipment, and are located throughout the cantonment area. Airfield includes the areas necessary for the operation and maintenance of Marshall Army Airfield, and is located only in the southeastern portion of the installation. Supply and storage areas are designed for bulk-type storage of all classes of Army supplies, and are located throughout the cantonment area. Community facilities include commercial services such as the Post Exchanges, eating establishments, and theaters, and community facilities such as schools and churches. Community facilities are located in the cantonment area, and are typically near to housing areas. Industrial areas include facilities for manufacturing Army equipment and materials, utility plants and waste disposal facilities. These areas are located within the cantonment area, and are not compatible with housing areas. Unaccompanied Personnel Housing is located in several areas within the cantonment area and provides enlisted and officer barracks as well as associated administrative and community facilities for these personnel. Administration areas are typically headquarters or office buildings to accommodate offices and technical activities. These areas are located in cantonment area, and some areas are included within the RCI footprint. Medical areas include areas for inpatient and outpatient medical services, including the Irwin Army Community Hospital located northeast of the main post housing area.

The cantonment area includes land uses such housing, community services, recreation, administrative support, industrial, and transition areas. Community services include commercial services such as the Post Exchanges, eating establishments, and theaters, and community facilities such as schools and churches. Community services are scattered around the cantonment area. Recreation and buffer areas generally separate the Family housing areas and community services from the remainder of the cantonment area. The recreation and buffer areas include ball fields and other recreational facilities and open space (Fort Riley, 2005).

Impacts to land-use would be negligible under all of the alternatives. Fort Riley would continue to support it primary military training mission as a result of all alternatives. The installation has sufficient vacant space in existing buildings, sufficient land available to build facilities, or a combination thereof, to meet the mission requirements of additional units. Fort Riley anticipates that lands and facilities use by gaining units would be compatible with neighboring land use.

Fort Riley anticipates that the implementation of any of the alternatives would result in negligible impacts for those VECs discussed above. The following provides a discussion of the VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Proposed Action alternatives.

4.17.2 Air Quality

4.17.2.1 Affected Environment

Fort Riley is located in portions of Geary, Riley, and Clay counties, in northeastern Kansas, which is controlled by the North Central Kansas Intrastate AQCR. All three counties are in attainment for the six criteria pollutants and meet NAAQS.

Fort Riley is a major source of air pollutants and regulates air emissions through a Class I Air Emission Source Operating (Title V). Primary stationary sources include boilers, generators, fuel storage and dispensing areas, and surface coating operations (Fort Riley, 2005).

Since Fort Riley is located in an attainment area there is no requirement to conduct a conformity analysis. The CAA's PSD requirements are not anticipated to be triggered by the installation's activities.

4.17.2.2 Environmental Consequences

No Action Alternative

No change to the type or the frequency of training events would occur as a result of the implementation of the No Action Alternative. Although there would continue to be minor short- and long-term fugitive dust impacts from training, these impacts would not exceed threshold levels. Permit conditions would continue to be monitored and met, but no changes to or increases in emission sources are anticipated, other than those mandated by maintenance, replacement, or elimination of sources as they age and/or are removed from service.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have an anticipated beneficial impact to air quality resulting from the reduction in unit training events and the accompanying reduction in stationary and mobile emission sources, to include POV emissions. Conditions identified in air permits would continue to be monitored and may require changes as a result of the implementation of Alternative 1. Specifically, the permit may require modification to reflect the lowered emission levels resulting from less combustion and generation of NAAQS pollutants and HAPs associated with the reduction in the number of Soldiers engaged in military training and less vehicle traffic. Emissions from training, facilities operations, and vehicles would all be projected to decrease. In addition, there would be less fugitive dust generated from fewer unit training events.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Alternative 2 would have an anticipated minor (low) impact on air quality. An increase in emissions from mobile and stationary sources would result from the stationing of additional Soldiers and their Families at Fort Riley. The increased emissions and fugitive dust would be

derived from military vehicles, POVs, and generators supporting training events, but would not cause Fort Riley to exceed the limits of its Title V permit or cause any change in its attainment status. Any construction related emissions have the potential to produce localized, short-term elevated air pollutant concentrations but these are not anticipated to have a major effect on regional air quality. Over the long term, combustion emissions and fugitive dust resulting from training would be primarily from mobile sources. Air modeling indicates the installation could support the action with minimal impacts to air quality.

4.17.3 Airspace

4.17.3.1 Affected Environment

Fort Riley has 158 square miles of FAA-designated Restricted, SUA, up to 29,000 feet. The installation has access to this airspace continuously, and is controlled by the FAA of Kansas City, Missouri (USACE, 2002). Military uses of airspace at Fort Riley include air corridors over and in the vicinity of the installation for training of rotary-wing and fixed-wing aircraft.

4.17.3.2 Environmental Consequences

No Action Alternative

The No Action Alternative would not produce any conflicts with overlying restricted airspace, as no proposed change to existing conditions would occur. Thus, impacts would be negligible.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have negligible impacts to airspace, as the installation's military airspace use would not change significantly with the loss of ground units. Aviation and UAS units would continue to require airspace to support training, but at a slightly lower utilization level, as there would be a decreased number of UAS and integrated air-ground training events to support.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Alternative 2 would have an anticipated minor adverse impact to airspace. The number and type of aircraft utilizing the SUA would not change substantially and additional airspace would not be required to support the additional ground units; however, implementation of Alternative 2 would result in an increase in scheduling, activation, and utilization of the existing SUA. The increased operations could cause some minor impacts to air traffic flow within the National Airspace System around Fort Riley. Adhering to the existing airspace management and scheduling operations should minimize potential conflicts and impacts, despite additional time and use demands for the SUA.

4.17.4 Cultural Resources

4.17.4.1 Affected Environment

The affected environment for cultural resources is the footprint of Fort Riley. Fort Riley possesses both historic and archaeological resources.

Humans have traversed the boundaries of Fort Riley for over 10,000 years. The earliest travelers through the area were Native American hunter and gatherers who traveled great distances following game including mammoth and now extinct sub-species of Bison. Later Native Americans, who adopted practices such as small scale agriculture, were able to make Fort Riley a more permanent home. Fort Riley was established as a frontier cavalry post in 1853. The construction of the first permanent structures began in 1854. Visitors to Fort Riley will notice that the buildings were constructed of native limestone which was the most readily available construction material in Kansas at that time. The original military installation

established at the confluence of the Smoky Hill and Republican rivers was only 23,000 acres. Many early settlers also made the trek to Fort Riley to take advantage of fertile farm grounds, and the ready market for their goods that the early post provided. Fort Riley expanded in 1941, and again in 1965 to its present size. When the post expanded it overtook many of these early European American settlements. All of these prehistoric and historic activities have left a mark on Fort Riley.

The staff of Fort Riley CRMP (Conservation Branch, Environmental Division, DPW) is charged with identifying, evaluating, and protecting all of Fort Riley's cultural resources including historic buildings, archeological sites, artifacts, and Native American sacred sites. Protecting Fort Riley's cultural resources means coordinating with installation tenants, partners, and the public, including federally recognized Tribes with ancestral ties to the land where Fort Riley is located. The program sponsors an active archeological and historic building survey and evaluation program that includes managing the main post Historic District. The staff of the CRMP also maintains a state of the art curation facility to safely store all of the artifacts recovered during archeological and historic building surveys and evaluations.

The CRM program has identified, and manages, 911 archeological sites including 560 historic civilian, 118 historic military, 14 multi-component and 219 prehistoric archeological sites. Each of these 911 known sites must be evaluated to determine whether or not it is significant enough to warrant inclusion of the NRHP. Those determined to be NRHP significant are actively preserved. To date, 37 sites have been determined eligible for the NRHP; however, many still remain to be discovered, and staff of the CRM Program has only surveyed approximately 60 percent of Fort Riley's 101,000 acres. The CRM Program staff also manages the main post Historic District. The main post Historic District is a 1-mile square area containing 294 historic buildings, landscapes and monuments. It has been listed on the NRHP since 1974. Many of these buildings have been retrofitted for numerous adaptive reuses to serve the modern military.

A Programmatic Agreement between the DA, Fort Riley, the Kansas SHPO, and the ACHP addresses activities at the garrison that affect historic properties included in or potentially eligible for inclusion in the NRHP (Fort Riley, 2006a). The Programmatic Agreement ties together the more specific management practices and activities that the garrison had been accomplishing under several individual management plans and agreements.

4.17.4.2 Environmental Consequences

No Action Alternative

Impacts to cultural resources from the No Action Alternative would be negligible. Activities with the potential to affect cultural resources are monitored and regulated when anticipated through a variety of preventative and minimization measures.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have an anticipated minor adverse impact to cultural resources. Removal of temporary facilities vacated by departing units would have a very low potential for adverse impacts to archeological resources due to the minimal amount of ground disturbance associated with such actions. Removal of outdated and under-utilized infrastructure has the potential to affect historic structures, but would be conducted in accordance with the current procedures outlined in the installation's 2006 Programmatic Agreement with the SHPO (Fort Riley, 2006a). If an undertaking has the potential to adversely affect historic properties, consultation with the SHPO would occur, per 36 CFR 800, as required. There is a low potential for potentially eligible historic structures to be affected as a result of this action. Facilities requirements would be reduced along with training land use intensity, reducing the risk of NHPA, ARPA, or NAGPRA violations.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Alternative 2 would have an anticipated minor impact to cultural resources. Measures are in place to accommodate training while minimizing potential adverse impacts to cultural resources. The types of training conducted by the additional Soldiers would not change, although some training areas on Fort Riley might experience more frequent or intense use compared with current baseline conditions. The ICRMP addresses consultation requirements for anticipated training impacts, and Fort Riley would continue to follow these procedures. Increased use of established ranges has the potential to increase the use of adjacent bivouac areas, potentially leading to the loss of some cultural resources through associated small-scale ground disturbance.

4.17.5 Noise

4.17.5.1 Affected Environment

The noise environment at Fort Riley is impacted by operations common to many active Army installations. These operations include small arms and heavy weapons firing, demolition activities, and aircraft operations. Other sources of noise from installation operations and activities include maintenance and shop operations, ground traffic, construction, and similar sources; however, this noise is generally confined to the installation and is comparable to sounds that occur in communities adjacent to the installation.

U.S. Army Center for Health Promotion and Preventive Medicine, now named the Public Health Command, conducted a study (Fort Riley, 2006b), to provide Fort Riley with aviation, as well as, small and large caliber weapons noise contours to evaluate impacts of proposed BRAC stationing actions. That study used two noise simulations programs to assess noise resulting from large caliber (20mm and larger) and small caliber (.50 caliber and smaller) weapons firing. A third program was used to determine adequate noise buffer zones to reduce potential annoyance from aircraft operations. In 2009, small caliber noise was reanalyzed and small arms noise contours were updated in response to new small arms range construction.

4.17.5.2 Environmental Consequences

When evaluating the actions proposed in this PEA, the primary concern is the potential to change the frequency and duration of noise that is experienced in the local communities. The proposed alternatives would not introduce new weapons systems or aircraft, rather the frequency of training would increase or decrease depending upon whether the population of Soldiers increased or decreased. The anticipated environmental noise impacts for each of the proposed alternatives at Fort Riley follow.

No Action Alternative

Negligible impacts from noise are anticipated under the No Action Alternative. The acoustic environment of Fort Riley would continue to be affected by small- and large-caliber weaponry, artillery, and aircraft over-flight. Other activities, such as ground maneuver training and exercises resulting in noise created by personnel and vehicles, would continue to contribute noise on Fort Riley, to the same levels and intensity as historically experienced.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have an anticipated negligible and slightly beneficial impact to the noise environment, with a reduction in the frequency of noise generating events. Existing ranges would still be utilized for firing the same types of weapons systems and conducting the same types of training. Fort Riley's remaining BCTs would also continue to conduct maneuver and

live-fire training in the field. However, a reduction of up to 8,000 Soldiers would reduce the installations noise contours and the size of existing NZs based on a decrease in the frequency of training events. While the frequency of training would be anticipated to change, the types of noise and weapons systems and vehicles used at Fort Riley would not be anticipated to change. Aviation units on Fort Riley would not be impacted by these decisions though frequency of aviation operations would be anticipated to decrease slightly leading to less aviation noise and a slight beneficial impact. With the loss of a BCT and other units less aviation support would be required.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Alternative 2 would have an anticipated minor impact on the noise environment on the installation and surrounding communities due to the stationing of up to 3,000 Combat/Combat Support Soldiers. Noise modeling conducted in 2006 indicated that a dramatic increase in live-fire training activity would need to occur to impact sensitive receptor populations; however, increased large caliber weapons firing could result in larger noise contours further off post resulting in a higher frequency of complaints. Citizens in the surrounding communities would be impacted by a larger number of noise events from military training activities. The frequency of aircraft operations could increase slightly. Given that the additional of 3,000 Soldiers represents an increase of approximately 15 percent of the installations Soldiers, it is assumed this alternative would lead to an approximate 15 percent increase in the frequency of training activity and noise generating events at Fort Riley. Given that there are no new types of activities that would occur, just an increase in the frequency of existing noise generating activities, only minor impacts are anticipated to occur as a result of implementing this alternative.

4.17.6 Soil Erosion

4.17.6.1 Affected Environment

Fort Riley is located in the Central Lowlands province with elevations at approximately 1,000 feet. There are three types of topographical areas: high upland tall grass prairies, alluvial bottomland floodplains, and broken and hilly transition zones.

Fort Riley is part of the Great Plains Winter Wheat and rangeland Soil Resource Region. Most soils are friable, silt loam up to 12 inches thick, overlying nearly impervious clays.

4.17.6.2 Environmental Consequences

No Action Alternative and Alternatives 1 and 2

Implementation of all alternatives would result in minor impacts to soils. Fort Riley's prairie vegetation recovers quickly from surface disturbance caused by maneuver training. Fort Riley anticipates that reduced military training demands on maneuver lands would lessen short-term surface disturbance; however, even with increased training and increased surface disturbance, impacts are expected to be minor. The installation's ITAM program would continue to restore and rehabilitate military training lands to minimize soil erosion.

4.17.7 Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species)

4.17.7.1 Affected Environment

Most of Fort Riley is tall- and mixed-grass prairie dominated by big bluestem, indiangrass, and switchgrass; or "go-back" grassland that populates former croplands. The remainder of Fort Riley's natural area is primarily woodland.

Numerous systematic surveys conducted since 1990 have documented the presence of six federally and/or state-listed threatened and endangered species, and eighteen rare species. No recorded observations exist for 12 other listed or rare species, but there is a possibility that one or more of those species could occur on Fort Riley. Fort Riley's threatened and endangered species management most often involves controls on habitat for the Topeka shiner and other species to include the bald eagle, though it is no longer listed under the ESA. Details pertaining to the management of threatened and endangered species present on Fort Riley are contained in the garrison's 2010 INRMP (Fort Riley, 2010). Table 4.17-2 provides a list of species.

Table 4.17-2. Federally- and State-listed Species and Other Rare Species That Occur or Could Occur on Fort Riley

Common Name	Scientific Name	Federal	State	Possibility on Fort Riley
Common shiner	*Luxilus cornutus*		SINC	Resident
Southern redbelly dace	*Phoxinus erythrogaster*		SINC	Resident
Johnny darter	*Etheostoma nigrum*		SINC	Resident
Bobolink	*Dolichonyx oryzivorus*		SINC	Migrant
Black rail	*Laterallus jamaicensis*		SINC	Migrant
Black tern	*Chlidonias niger*		SINC	Migrant
Eskimo curlew	*Numenius borealis*	E	E	Possible
Ferruginous hawk	*Buteo regalis*		SINC	Migrant - possible winter resident
Golden eagle	*Aquila chrysaetos*		SINC	Transient
Henslow's sparrow	*Ammodramus henslowii*	SAR	SINC	Summer resident
Least tern	*Sterna antillarum*	E	E	Migrant – possible nesting
Piping plover	*Charadrius melodus*	T	T	Migrant – possible nesting
Rusty Blackbird	*Euphagus carolinus*	SAR		Migrant
Short-eared owl	*Asio flammeus*		SINC	Resident
Snowy plover	*Charadrius alexandrinus*		T	Migrant
Whip-poor-will	*Caprimulgus vociferous*		SINC	Summer resident
Long-billed Curlew	*Numenius americanus*		SINC	Possible
Whooping crane	*Grus Americana*	E	E	Possible
Yellow–throated Warbler	*Dendroica dominica*		SINC	Possible
Southern bog lemming	*Synaptomys cooperi*		SINC	Resident
Eastern spotted skunk	*Spilogale putorius*		T	Possible
Franklin's Ground Squirrel	*Spermopilus franklinii*		SINC	Possible
Eastern hognose snake	*Heterodon platirhinos*		SINC	Possible
Timber rattlesnake	*Crotalus horridus*		SINC	Possible
Western hognose snake	*Heterodon nasicus*		SINC	Resident
Texas horned lizard	*Phrynosoma cornutum*	SAR		Resident
Blue sucker	*Cycleptus elogatus*		SINC	Resident
Highfin Carpsucker	*Carpiodes velifer*		SINC	Possible
Plains minnow	*Hybognathus placitus*		T	Confirmed

Silver chub	*Macrhybopsis storeriana*		E	Possible
Sturgeon chub	*Macrhybopsis gelida*		T	Resident
Topeka shiner	*Notropis Topeka*	E	T	Resident
American burying beetle	*Nicrophorus americanus*	E	E	Possible
Prairie mole cricket	*Gryllotalpa major*		SINC	Resident
Regal fritillary butterfly	*Speyeria idalia*	SAR	NA	Resident
Western prairie fringed orchid	*Platanthera praeclara*	T	NA	Possible

E = Endangered, In danger of extinction throughout all or a significant portion of its range; Possible = Habitat is present and species range overlaps the area but the species is not documented on Fort Riley; SAR = Species at Risk, U.S. Army designation for priority species in need of conservation on installations; SINC = Species in Need of Conservation, Questionable ability to be self-sustaining species in Kansas; T = Threatened, Likely to become endangered within the foreseeable future.

4.17.7.2 Environmental Consequences

No Action Alternative

Negligible adverse impacts would occur at Fort Riley under the No Action Alternative. Fort Riley would continue to adhere to its existing resource management plans and to further minimize and monitor any potential impacts. Units are briefed prior to each training event regarding sensitive areas on post, such as protected species habitat.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have an anticipated beneficial impact to biological resources. Scheduling conflicts for training area access to conduct resource monitoring would be reduced. Proactive conservation management practices would be more easily accomplished with reduced mission throughput and there would be less training disturbance, allowing areas with habitat more time to recover with less potential for training related disturbance.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Alternative 2 would have an anticipated minor adverse impact to biological resources. The increase in the number of Soldiers is less than 15 percent above the current level. While this moderate force augmentation would increase traffic in the training lands and ranges, it would not cause substantial degradation or destruction of threatened, endangered, or sensitive species habitats. Listed species and other special status species recorded on the installation would continue to be managed in accordance with the installation's INRMP and ESMP, terms and conditions identified within Biological Opinion(s) issued by the USFWS and any conservation measures identified in ESA, Section 7 consultation documents. Fort Riley proactively manages its conservation programs within the installation's training areas; however, access to training lands and ranges for the purpose of threatened and endangered species monitoring and habitat management would become more difficult with increased training. Access is essential to conduct management actions (prescribed burning, etc.) and to conduct monitoring in order to demonstrate that populations of threatened and endangered species are stable or increasing. Natural resource management staff would continue to implement required species management and monitoring, but increased coordination with range managers would occur to schedule management activities.

4.17.8 Water Resources

4.17.8.1 Affected Environment

Surface Water. Nearly 145 miles of rivers and streams, consisting of 14 miles of rivers and 131 miles of streams, are present on Fort Riley. Streams drain to Wildcat Creek, Republican River or Kansas River. Surface water bodies on Fort Riley are designated for recreation, anticipated aquatic life, consumptive recreation, domestic water supply, industrial water supply, and groundwater discharge.

Water Supply. Groundwater is the primary raw water source at Fort Riley. Fort Riley main post is supplied by eight wells ranging in depth from about 60 to 80 feet. Individual well capacities range from 500 to 1,250 gpm. The total pumping capacity from these wells is 7,500 gpm or 10.8 mgd. Groundwater is withdrawn from aquifers that are recharged by the Republican and Kansas rivers. The existing water supply could support an effective population of more than 63,000 persons, much greater than the installation's current daytime population.

Fort Riley has a water treatment facility with a design capacity of up to 10 mgd. The existing water treatment facilities could support a population of nearly 59,000 persons, which provides ample capacity for growth.

The total treated water storage capacity is 7.25 million gallons. Fort Riley currently stores about 5.5 million gallons of potable water.

Wastewater. Fort Riley is currently served by two advanced WWTP permitted for treating domestic wastewater. One WWTP on Custer Hill was brought on line in 2005. It replaced three separate trickling filter WWTPs that formerly served the three major cantonment areas within the installation. The design flow is about 2.35 mgd, a maximum monthly flow of 2.8 mgd, a maximum daily flow of 3.2 mgd, and a peak instantaneous flow of 7.4 mgd. The second plant began operating in the fall of 2011 and serves the two cantonment areas south of Vinton School Road. The second plant has a design flow of 3.0 mgd and a peak flow of 6 mgd.

Both plants treat domestic wastewater, vehicle maintenance area wastewater, medical facility wastewater, floor-scrubbers wash water, cooling towers heat exchanger coil cleaning wastewater, oily aircraft wash water, purge water from monitoring wells and laundry wastewater.

An industrial wastewater system also is present on Fort Riley on Custer Hill. That system treats wastewater from Tactical Equipment shops, motor pools and other industrial facilities on Fort Riley as well as a large vehicle wash facility. Wastewater from these facilities flows into a lagoon system that consists of a 6-acre reservoir and 4 lagoon cells that vary in size from 4 to nearly 9 acres. Prior to entering the lagoon system, wastewater from the industrial facilities flow through sedimentation basins to remove suspended solids, grit and oil.

***Stormwater*.** Industrial stormwater runoff is discharged at various locations throughout the installation. The locations are listed in the Fort Riley SWPPP and updated in the Annual Stormwater Monitoring Reports. Fort Riley and its construction contractors obtain stormwater permits for construction projects covering 1 or more acres. The Environmental Division, DPW teaches quarterly classes for organizations that perform construction work on Fort Riley to meet stormwater pollution prevention obligations.

4.17.8.2 Environmental Consequences

No Action Alternative

The No Action Alternative would have minor impacts to water resources. No change from existing conditions would occur and all construction, operation, and maintenance projects already under way have obtained the NPDES permit and other applicable permits and are

operating in adherence to their guidance. Training activities would continue, both on ranges and training lands, with adverse impacts including sedimentation into surface waters, however these would continue to be mitigated via the ITAM land rehabilitation program.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have an anticipated beneficial impact to water resources. A loss of up to 8,000 Soldiers and Army civilian employees would reduce traffic in Fort Riley's training areas, roads, and ranges, decreasing the chance of potential surface water impacts. The demand for potable water would also be diminished, and implementation of Alternative 1 would create additional treated wastewater capacity for other uses at the installation.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Implementation of Alternative 2 would have an anticipated minor impact to water resources, as discussed in detail below.

Surface Water. Minor construction would occur as a result of the implementation of Alternative 2, and its potential impacts managed through adherence to existing NPDES and other permits. An increase in training would result in an accompanying increase in the frequency and intensity of usage for existing road, trail, and training areas. This could lead to increased sedimentation and surface water impacts attributable to soils compaction, increased vegetation loss, and increased sheet flow during rain events. Implementation of existing ITAM land rehabilitation measures would prevent these potential impacts from reaching a level of significance.

***Water Supply*.** Potable water capacity at Fort Riley is 10.8 mgd. Based on the average of 100 gpd of potable water use per person it is anticipated that up to 3,000 additional Soldiers would increase potable water demand by up to approximately 300,000 gpd, a demand well within the unused potable water capacity of Fort Riley's wells. When considering the potential dependent populations water usage, the requirements for up to another 456,000 gpd could also be needed if all dependents associated with the stationing action were to live on post. This water demand is still well within the capacity of Fort Riley's wells. As such, this level of growth would not adversely impact Fort Riley's water supply. Fort Riley is currently implementing water resource conservation measures to consume less potable water and to ensure adequate resources in the future. Any new construction and land disturbance over 1 acre would require a stormwater construction permit that would include requirements for protection of stormwater. Domestic and industrial wastewaters generated from additional Soldiers would be treated by Fort Riley's wastewater system, which has sufficient capacity to treat the additional wastewater. Although water demand would increase, Fort Riley has sufficient potable water supply, treatment, and storage capacity to support the increase in demand.

4.17.9 Facilities

4.17.9.1 Affected Environment

The Fort Riley cantonment area includes land uses such housing, community services, recreation, administrative support, industrial, and transition areas. Community services include commercial services such as the Post Exchanges, eating establishments, and theaters, and community facilities such as schools and churches. Community services are scattered around the cantonment area. Recreation and buffer areas generally separate the Family housing areas and community services from the remainder of the cantonment area. The recreation and buffer areas include ball fields and other recreational facilities and open space.

On-post land uses at Fort Riley are functional in nature, have a common purpose, and denote major land uses not minor adjuncts to the primary use. For example, although an industrial land

use area may also contain administration, medical, community facilities, and supply and storage areas, the main use is industrial. Cantonment-type training and ranges land use functions include all types of academic facilities, indoor firing ranges, Army Reserve and National Guard centers, range control towers, ammunition breakdown and distribution sheds, target storage and maintenance buildings, range control buildings, simulator buildings, training courses, and outdoor facilities.

4.17.9.2 Environmental Consequences

No Action Alternative

Impacts to facilities would be negligible under the No Action Alternative. Fort Riley's current facility shortfalls have been prioritized and are seeking or have received Army funding. The installation would continue to implement the Army's FRP at Fort Riley. Environmental analyses of the projects that result from these programs are conducted prior to implementation.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have an anticipated minor impact on facilities. An increase in the FRP and facilities demolition at Fort Riley would occur as a result of the implementation of Alternative 1. Older, less efficient facilities nearing the end of their life-cycle would be demolished to save the Army money on maintenance and energy requirements. Facility usage and availability for the remaining population would not be affected.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Alternative 2 would have an anticipated minor impact on facilities. Increased Soldier strength of up to 3,000 would be reflected through increased usage of facilities throughout the cantonment area. Increased activities within the training and range areas would be anticipated. Adequate temporary re-locatable facilities currently exist in the cantonment area and could support the stationing of additional Soldiers; however, these facilities were scheduled for turn-in during FY 2012, and they would be needed to accommodate new Soldiers. Increased activities within the training and range areas could be managed with optimal scheduling and utilization. The Real Property Master Plan would require modifications to allow for implementation of Alternative 2. Some additional construction of facilities would be needed to support new Soldiers stationed at Fort Riley. Some of these facilities would include a battalion headquarters facility, company operations facility, motorpool, and barracks. These facilities have been identified as garrison facility shortfalls by installation master planners.

4.17.10 Socioeconomics

4.17.10.1 Affected Environment

Fort Riley is located in northeast Kansas, on the Kansas River, between Junction City and Manhattan. The ROI consists of Geary, Dickinson, Clay, and Riley counties.

Population and Demographics. The Fort Riley population is measured in three different ways. The daily working population is 20,001, and consists of full-time Soldiers and Army civilians employees working on post. The population that lives on Fort Riley consists of 9,900 Soldiers and 10,518 dependents, for an on-post total resident population of 20,418. Finally, the portion of the ROI population related to Fort Riley is 25,439, and consists of Soldiers, civilian employees, and their dependents living off post.

The ROI county population is approximately 135,500. Compared to 2000, the 2010 population increased in Geary, Dickinson, and Riley counties. Population decreased in Clay County from

2000 to 2010 (Table 4.17-3). The racial and ethnic composition of the ROI is presented in Table 4.17-4.

Table 4.17-3. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Geary	35,000	+ 23
Dickinson	20,000	+ 2.1
Clay	8,500	- 3.3
Riley	72,000	+ 13.2

Table 4.17-4. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Kansas	78	6	2	11	1	2	0
Geary	60	18	1	12	3	5	1
Dickinson	93	1	0	4	0	2	0
Clay	96	0	0	2	0	1	0
Riley	80	6	1	6	4	3	0

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased in the State of Kansas and Geary and Riley counties (Table 4.17-5). Employment decreased in Dickinson and Clay counties. Fort Riley has 3,888 Family quarters: 441 for officers and 3,447 for enlisted personnel. Barracks spaces for unaccompanied personnel total to 6,600. Of those barracks spaces, 95 percent meet the Army's highest standards. Employment, median home value, household income, and poverty level are presented in Table 4.17-5.

Table 4.17-5. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
Kansas	1,146,263	+ 1.6	118,500	47,709	13.20
Geary	8,343	+ 0.1	110,700	44,033	11.40
Dickinson	5,153	- 12.7	92,500	44,307	9.90
Clay	2,529	- 2.5	82,200	44,454	11.50
Riley	20,816	+ 5.9	148,600	40,612	26.30

Schools. Children of military personnel attend school in numerous ROI communities. Fort Riley accounts for 62 percent of students at Geary County USD 475, 25 percent of students at Manhattan-Ogden USD 383, and 6 percent of students at all other schools in the ROI. Based on the number of military dependents they support annually, Geary County USD 475 and

Manhattan-Ogden USD 383 receive major federal funding ($13,627,400 and $361,174; respectively).

Public Health and Safety

- **Police.** The Fort Riley Police Department, a part of the Directorate of Emergency Services, provides law enforcement and property protection at Fort Riley. Police functions include protecting life and property, enforcing criminal law, conducting investigations, regulating traffic, providing crowd control, and performing other public safety duties. City, county, and state police departments provide law enforcement in the ROI.
- **Fire.** The Fort Riley Fire Department, a part of the Directorate of Emergency Services, provides emergency firefighting and rescue services at Fort Riley. Fire prevention is another service provided by the Fort Riley Fire Department. Fire prevention activities include providing fire safety advice and insuring that structures are equipped with adequate fire precautions to ensure that in the event of fire, people can safely evacuate the premises unharmed.
- **Medical.** Fort Riley supports a range of medical services. The Irwin Army Community Hospital provides healthcare services for military personnel, military dependents, and to military retirees and their dependents. Irwin Army Community Hospital services include audiology/speech pathology, dermatology, dietetics, emergency services, family medicine, internal medicine, OB/GYN, occupational therapy, ophthalmology, optometry, orthopedics, otolaryngology, pediatrics, physical therapy, psychiatry, surgery, podiatry, psychology, social work, and substance abuse. Fort Riley also provides dental services and supports a Warrior Transition Battalion.

Family Support Services. The Fort Riley Directorate of FMWR and ACS provide programs, activities, facilities, services, and information to support Soldiers and Families. Services provided at Fort Riley include child care, youth programs, deployment readiness for Families, employment readiness, financial readiness, relocation readiness, exceptional Family member support, Warrior in Transition support, and survivor outreach.

Recreation Facilities. Fort Riley facilities or programs for recreation include fitness centers, swimming pools, athletic fields, golf course, bowling center, outdoor recreation opportunities, sports teams, and a Warrior Zone.

4.17.10.2 Environmental Consequences

No Action Alternative

The No Action Alternative would result in beneficial impacts to existing socioeconomic resources. Fort Riley's operations would continue to provide beneficial economic impacts within the region. No additional impacts to housing, public and social services, public schools, public safety, or recreational activities are anticipated.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of up to 8,000 military employees (Soldiers and Army civilian employees), each with an average annual income of $41,830. In addition, this alternative would affect an estimated 4,464 spouses and 7,680 dependent children, for a total estimated potential impact to 12,144 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 20,144.

Based on the EIFS analysis, there would be significant socioeconomic impacts for sales volume, income, employment, and population in the ROI for this alternative. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.17-6. Table 4.17-7 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.17-6. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	10.72	9.16	5.48	8.08
Economic Contraction Significance Value	- 8.95	- 8.19	- 3.60	- 2.81
Forecast Value	- 11.75	- 13.45	- 17.71	- 14.9

Table 4.17-7. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- $379,642,400	- $378,752,300	- 8,892 (Direct) - 1,177 (Indirect) - 10,069 (Total)	- 20,144
Percent	- 11.75 (Annual Sales)	- 13.45	- 17.71	- 14.9

The total annual loss in volume of direct and secondary sales in the ROI represents an estimated -11.75 percent change in the current total sales volume of $3.23 billion within the ROI. It is estimated that state tax revenues would decrease by approximately $23.87 million as a result of the loss in revenue from sales reductions. Some counties within the ROI supplement the state sales tax of 6.3 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by 13.45 percent. While 8,000 Army Soldier and government civilian employee positions would be lost within the ROI, EIFS estimates another 892 military contract service jobs would be lost, and an additional 1,177 job losses would occur indirectly as a result of reduced demand for goods and services. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 10,069 jobs, or a -17.71 percent change in regional non-farm employment. The total number of employed positions (non-farm) in the ROI is estimated to be 56,842. A significant population reduction of 14.9 percent within the ROI is anticipated as a result of this alternative. Of the approximately 135,500 people (including those residing on Fort Riley) that live within the ROI, 20,144 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This could lead to a decrease in demand for housing, and increased housing availability in the region. This would lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes civilian and military employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.17-8 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.17-8. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- $274,958,832 (Local) - $512,672,096 (State)	- $370,596,376	- 8,605 (Direct) - 751 (Indirect) - 9,356 (Total)
Percent	- 8.48 (Total Regional)	- 13.16	- 16.46

The total annual loss in volume of direct and secondary sales in the ROI represents an estimated -8.48 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 3.27 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately $32.3 million as a result of the loss in revenue from sales reductions, which would be $8.43 million less in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by 13.16 percent, slightly less than the 13.45 percent reduction projected by EIFS. While 8,000 Army Soldier and government civilian positions would be lost within the ROI, RECONS estimates another 605 military contract and service jobs would be lost, and an additional 751 job losses would occur indirectly as a result of reduced demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 9,356 jobs, or a -16.46 percent change in regional employment, which would be 1.25 percentage points less than projected by the EIFS model.

When assessing the results together, both models estimate a similar net reduction of economic activity within the ROI.

Population and Demographics. Fort Riley anticipates a substantial reduction in military population throughput as a result of the implementation of Alternative 1.

Housing. Alternative 1 would increase the availability of barracks space for unaccompanied personnel and Family quarters. Those outcomes would likely decrease the off-post demand for rentals and purchases of housing. Fort Riley anticipates long-term, significant adverse affects in Junction City, Manhattan, and in the smaller communities of the ROI.

Schools. Fort Riley anticipates the potential for significant adverse impact to the Geary County USD 475 under Alternative 1. That school district has invested in school facilities to support the recent population growth of Fort Riley that resulted from the 2005 BRAC action and other Army stationing actions. Adverse impacts are likely for the Manhattan-Ogden USD 383 also, where that school district also confronted a BRAC-related increase in the population of school children.

Public Health and Safety. As a result of Alternative 1, the anticipated population decrease at Fort Riley would likely reduce the demand for law enforcement services, fire and emergency services, and medical care services on and off post. Fort Riley anticipates less than significant impacts to public health and safety under the Proposed Action.

Family Support Services. Under Alternative 1, Fort Riley anticipates a reduced demand for FMWR and ACS programs on post. The demand for Family support services off post would

likely decrease also. Fort Riley anticipates less than significant impacts to Family support services under the Proposed Action.

Recreation Facilities. Use of recreation facilities on post would likely decline under Alternative 1. Fort Riley anticipates that utilization decreases would be minor or moderate.

Environmental Justice. Under Alternative 1, Fort Riley anticipates no disproportionate adverse impact to minorities, economically disadvantaged populations, or children. Job losses would likely be felt across the ROI, affecting all income levels and many economic sectors.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Economic Impacts. Alternative 2 would result in the increase of up to 3,000 Soldiers, each with an average annual income of $41,830. In addition, this alternative would affect an estimated 1,674 spouses and 2,880 dependent children, for a total estimated potential impact to 4,554 dependents. The total population of military employees and their dependents directly affected by Alternative 2 would be projected to be 7,554.

Based on the EIFS analysis, there would be no significant impacts for sales volume, income, or population. There would be significant impacts for employment. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.17-9. Table 4.17-10 presents the projected economic impacts to the region for Alternative 2 as assessed by the Army's EIFS model.

Table 4.17-9. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 2

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	10.72	9.16	5.48	8.08
Economic Contraction Significance Value	- 8.95	- 8.19	- 3.60	- 2.81
Forecast Value	4.40	5.04	6.64	5.57

Table 4.17-10. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	$142,365,900	$142,032,100	3,334 (Direct) 442 (Indirect) 3,776 (Total)	7,554
Percent	4.40 (Annual Sales)	5.04	6.64	5.57

The total annual gain in volume of direct and secondary sales in the ROI represents an estimated 4.40 percent change from the current total sales volume of $3.23 billion within the ROI. It is estimated that state tax revenues would increase by approximately $4.94 million as a result of the gain in revenue from sales increases. Some counties within the ROI supplement the state sales tax of 6.3 percent by varying percentages, and these additional local tax revenues would be gained at the county and local level. Regional income would increase by 5.04 percent. While 3,000 Soldiers would be gained within the ROI, EIFS estimates another 334 military contract service jobs would be gained, and an additional 442 jobs would be created

from increases in demand for goods and services in the ROI indirectly. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 3,776 jobs, or a 6.64 percent change in regional employment. The total number of employed positions (non-farm) in the ROI is estimated to be 56,842. A population increase of 5.57 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 135,500 people (including those residing on Fort Riley) that live within the ROI, 7,554 Soldiers and their dependents would be begin to reside in the area following the implementation of Alternative 2. This would lead to an increase in demand for housing, and decreased housing availability in the region. This would lead to a slight increase in median home values. It should be noted that this estimate of population increase includes civilian and military employees and their dependents.

Table 4.17-11 shows the total projected economic impacts, based on the RECONS model, that would be anticipated to occur as a result of the implementation of Alternative 2.

Table 4.17-11. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment
Total	$103,109,562 (Local) $192,252,036 (State)	$138,973,641	3,227 (Indirect) 282 (Indirect) 3,509 (Total)
Percent	3.18 (Total Regional)	4.93	6.17

The total annual gain in volume of direct and secondary sales in the ROI represents an estimated 3.18 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 1.22 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would increase by approximately $12.11 million as a result of the gain in revenue from sales reductions, a large increase ($7.17 million) in additional state sales tax revenue in comparison to the EIFS model. Regional income is projected by RECONS to increase by 4.93 percent, slightly less than the 5.04 percent increase projected by EIFS. While 3,000 Soldiers would be gained within the ROI, RECONS estimates another 227 military contract and service jobs would be gained, and an additional 282 jobs would be created indirectly from increased demand for goods and services in the ROI. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 3,509 jobs, or a 6.17 percent change in regional non-farm employment, which would be 0.47 percentage points less than projected by the EIFS model.

When assessing the results together, both models predict similar net increases of economic activity within the ROI.

Population and Demographics. Under Alternative 2, Fort Riley anticipates a minor increase in military population throughput.

Housing. Alternative 2 would likely add to the pool of Soldiers that want to live on post. Barracks space for unaccompanied personnel and quarters for Families would be available to a smaller percentage of Soldiers in the total Fort Riley population. As a result, the demand for off-post rentals and purchases of housing would likely increase. Fort Riley anticipates long-term, minor beneficial impacts in Junction City, Manhattan, and in the smaller communities of the ROI.

Schools. Fort Riley anticipates the potential for minor impacts to the Geary County USD 475 and the Manhattan-Ogden USD 383 as a result of implementation of Alternative 2. Both school

districts have integrated higher numbers of students into their schools due to the BRAC-related population growth of Fort Riley in recent years. Alternative 2 would further challenge local school districts to a minor degree.

Public Health and Safety. Under Alternative 2, the anticipated population increase at Fort Riley would likely increase the demand for law enforcement services, fire and emergency services, and medical care services on and off post. Fort Riley anticipates minor impacts to public health and safety under the Proposed Action.

Family Support Services. Under Alternative 2, Fort Riley anticipates an increased demand for FMWR and ACS programs on post. The demand for Family support services off post would likely increase also. Fort Riley anticipates minor impacts to Family support services under the Proposed Action.

Recreation Facilities. Use of recreation facilities on post would likely increase under Alternative 2. Fort Riley anticipates that utilization increases would be minor. Some facilities could become crowded and less user-friendly during peak use hours.

Environmental Justice. Under Alternative 2, Fort Riley anticipates no disproportionate adverse impact to minorities, economically disadvantaged populations, or children. The impacts of the anticipated growth of Fort Riley would be felt throughout the ROI and across all populations.

4.17.11 Energy Demand and Generation

4.17.11.1 Affected Environment

***Electrical System*.** A private electric utility company provides primary electrical power to Fort Riley. All other power distribution lines, transformers, and associated equipment are owned, operated, and maintained by the installation. The electrical transmission and distribution system consists of both overhead and underground lines providing adequate coverage to areas on the installation. Some remote training areas on the installation are supplied electric power through independent rural electrical companies.

Natural Gas and Propane. Natural gas is supplied to Fort Riley via two parallel pipelines measuring 8 inches and 10 inches in diameter. The Fort Riley distribution system for natural gas consists of pipe sizes ranging from 2 to 12 inches in diameter and extends from the gas service main to all required locations within the cantonment areas. The overall condition of the distribution system is good and is adequate for existing demands. Propane is used to heat remote locations such as training areas at Fort Riley, where very small amounts of liquid propane gas are used.

4.17.11.2 Environmental Consequences

No Action Alternative

The No Action Alternative would result in negligible energy demand and generation impacts. Fort Riley's ranges and garrison area would continue to use and generate the same types and amounts of utility consumption for which the installation is already managing. Maintenance of existing utility systems would continue.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have an anticipated beneficial impact to energy demand due to the reduction in the on-post usage and requirement for energy associated with the reduction in Soldiers. The reduction in Soldiers, civilians, and dependents would allow the installation to demolish energy inefficient outdated facilities; however, Fort Riley would continue to search for

innovative ways to conserve energy and improve its energy efficiency, as mandated by law and ARs for energy conservation.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Alternative 2 would have an anticipated a minor adverse impact to energy demand due to the addition of up to 3,000 Soldiers and their Family members on post and their associated energy usage and requirements. Fort Riley's existing energy infrastructure has sufficient excess capacity, diversity, and scalability to readily accommodate this growth. Fort Riley would implement energy conservation measures to decrease its per capita consumption of energy and increase the installations energy efficiency.

4.17.12 Hazardous Materials and Hazardous Waste

4.17.12.1 Affected Environment

The affected environment for the Proposed Actions includes the use, storage, transport, and disposal of hazardous materials and waste at Fort Riley. This includes hazardous materials and waste from USTs and ASTs, pesticides, LBP, asbestos, PCBs, radon, and UXO. Fort Riley operates under a HWMP that manages hazardous waste to promote the protection of public health and the environment. Army policy is to substitute nontoxic and nonhazardous materials for toxic and hazardous ones; ensure compliance with local, state, and federal hazardous waste requirements; and ensure the use of waste management practices that comply with all applicable requirements pertaining to generation, treatment, storage, disposal, and transportation of hazardous wastes. The program reduces the need for corrective action through controlled management of solid and hazardous waste (USACE, 2002).

4.17.12.2 Environmental Consequences

No Action Alternative

Overall, negligible impacts are anticipated under the No Action Alternative. There would be no change in Fort Riley's management of hazardous materials, toxic substances, hazardous waste, or contaminated sites. Fort Riley would continue to manage existing sources of hazardous waste in accordance with the HWMP.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have an anticipated minor impact to hazardous materials and hazardous wastes. In the short term, there would be an increase in the demolition of outdated and no longer needed facilities, which would increase the volume of solid waste generated. In addition, an increase in asbestos containing materials and LBP disposal is anticipated until facility reduction is completed. Construction workers and Army personnel would take measures to dispose of materials in accordance with regulatory requirements and installation management plans.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Negligible short- and long-term impacts from hazardous materials and waste would be anticipated with a gain of up to 3,000 Soldiers. An increase in the use of hazardous chemicals could be seen in the cantonment and training and range areas. Any demolition, renovation, and construction would most likely result in an increase in the generation of asbestos, lead-contaminated wastes, and other hazardous waste, as well as an increase in the use of pesticides for any new facilities. The increase in these wastes would not result in adverse impacts because the wastes would be managed in accordance with applicable regulations. The

hazardous waste disposal facilities would be adequate to manage the increase in hazardous waste.

4.17.13 Traffic and Transportation

4.17.13.1 Affected Environment

Fort Riley is located in northeastern Kansas, approximately 55 miles west of Topeka, and 115 miles west of Kansas City. The ROI of the affected environment for traffic and transportation aspects of the Proposed Action include Fort Riley, and several neighboring counties, to include Riley, Geary and Clay counties, and the communities therein, to include the City of Manhattan, and the towns of Junction City and Ogden. Major road routes in the region include I-70, an east-west interstate highway that passes less than 0.5 miles to the south of the cantonment area. Other major routes in the area include U.S. Route 77, and Kansas State Routes 18, 57, and 82.

4.17.13.2 Environmental Consequences

No Action Alternative

Negligible impacts are anticipated under the No Action Alternative. Fort Riley's transportation system provides adequate LOS for its users and military and civilian members of the Fort Riley community.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have an anticipated beneficial impact to traffic and transportation systems. As fewer Soldiers and their Family members are left on post, it is anticipated that traffic congestion would be diminished and travel time would decrease. The roads would continue to be maintained and LOS for on- and off-post commuters would improve as traffic volume decreased.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Alternative 2 would have anticipated minor short and long-term impacts on traffic and transportation systems. The increase in off-post traffic would have a minimal impact on traffic in the community overall and would not be anticipated to result in a decrease in the LOS of the road network leading to the installation from off post. Implementation of Alternative 2 would, however, add congestion particularly during peak morning and afternoon travel periods. This increase in population would also have a minor impact on the traffic volume on the installation, and on some of the installation's interior routes.

4.17.14 Cumulative Effects

Region of Influence

The ROI for this cumulative impact analysis of Army 2020 realignment at Fort Riley encompasses four counties in the state of Kansas, unless otherwise stated in the analysis below. Manhattan and Junction City are the largest cities within the ROI. Manhattan is a center for education, healthcare, government, retail business, and manufacturing. Junction City is a center for government and commercial activities in support of Fort Riley. Fort Riley has long been a key component of the ROI economy, employing thousands of Soldiers and civilian employees. Fort Riley has been in operation supporting the Army since 1853.

There are numerous planned or proposed actions within the ROI that have the potential to cumulatively add impacts to Army Force 2020 alternatives. These actions are either in progress or reasonably could be initiated within the next 5 years. A number of the Army's proposed projects have been previously identified in the installation's Real Property Master Planning

Board and are programmed for future execution. A list of projects below presents some of the projects which may add to the cumulative impacts of the implementation of Army 2020 realignment alternatives.

Fort Riley Projects (Past, Present, and Reasonably Foreseeable):

- Battalion and Brigade Complexes;
- Multi-Purpose Machine Gun Range;
- Infantry Platoon Battle Course;
- Extended Range Multi-Purpose UAS Facilities;
- Roads and Streets Infrastructure Improvements;
- Network Enterprise Center Headquarters; and
- Hospital Renovation or Demolition.

Other Agency (DoD and non-DoD) Actions (Past, Present, and Reasonably Foreseeable):

- National Agro and Bio-Defense Facility in Manhattan; and
- Kansas State Route 18 Highway Improvements.

Fort Riley anticipates a range of cumulative effects resulting from the implementation of the Proposed Action and alternatives. Cumulative impacts for each alternative are as follows:

No Action Alternative

Beneficial through minor adverse cumulative impacts would be anticipated from implementing the No Action Alternative. Under the No Action Alternative, no changes in military authorizations, or local environmental conditions would be anticipated. Installation facility shortages and excesses would remain at their currently planned levels without additional stationing or force reductions. The Army would continue to implement some facilities reductions of outdated/unused facilities. Highway improvements by the Kansas Department of Transportation would continue, as planned. Operations of Fort Riley would continue to have a beneficial cumulative impact on socioeconomics at the current levels.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Cumulative impacts as a result of the implementation of Alternative 1, range from beneficial impacts to significant adverse impacts to socioeconomics. When viewed in conjunction with other past, present and reasonably foreseeable projects, the overall cumulative effects of Alternative 1 are projected to be either beneficial or no more than negligibly adverse impacts for all VECs except socioeconomics, which would be anticipated to have cumulatively significant adverse impacts.

Cumulative beneficial effects to air quality, noise, biological resources, water resources, energy demand and generation, and traffic and transportation would be anticipated. Reduced military training and less population pressure would produce those beneficial effects which would remain cumulatively beneficial environmental effects even when considering the impacts of other future projects, such as the Kansas State Route 18 Highway project.

As a result of Alternative 1, the Army anticipates significant cumulative adverse impacts to the socioeconomics. State-wide, off-post unemployment has risen from 4.0 percent to 5.9 percent from March 2008 to September 2012 (USDL, 2012). The force reduction proposed under Alternative 1 would cause a decline in employment within the ROI, and likely have broader effects in the state. Economic impacts would remain significant when considering reasonably foreseeable future projects and initiatives in the ROI.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Cumulative impacts are projected to range from beneficial impacts to socioeconomic conditions to minor adverse impacts. The following VEC areas are anticipated to experience either negligible or minor adverse cumulative impact as a result of the implementation of Alternative 2: air quality, airspace, cultural resources, noise, soil erosion, biological resources, wetlands, water resources, facilities, energy demand and generation, land use conflict and compatibility, hazardous materials and hazardous waste, and traffic and transportation. Fort Riley anticipates that the absorption of 3,000 additional Soldiers would cumulatively have little adverse impact in the region due to the existing infrastructure, management systems, and support mechanisms at Fort Riley and within the region. Existing and future planned transportation infrastructure can accommodate future population growth, as can the utilities and water treatment systems in the ROI. Impacts of proposed projects within the ROI would not be anticipated to result in decline of any federally-listed or sensitive species. Due to the ability of the local ecosystems and habitats to recover quickly, only minor impacts to natural resources and soils are anticipated. Cumulatively, impacts to air quality would be minor when considering roadway improvements and other projects in conjunction with the stationing of additional Soldiers at Fort Riley. No NAAQS thresholds would be breached or cause non-attainment issues within the AQCR. The growth associated with Alternative 2 in addition to other projects within the ROI would have a beneficial cumulative impact on socioeconomics.

4.18 SCHOFIELD BARRACKS AND U.S. ARMY GARRISON HAWAI'I

4.18.1 Introduction

The U.S. Army Garrison, Hawai`i (USAG-HI) is located on the islands of O'ahu and Hawai`i. USAG-HI is headquartered at Wheeler Army Airfield, approximately 25 miles northwest of the state capital of Honolulu, and maintains approximately 22 responsibility areas (sub-installations). The major units supported by the garrison include the 25th Infantry Division and its subordinate units to include the 2/25th SBCT, the 3/25th IBCT, and elements of the 25th ID CAB; the 8th Theater Sustainment Command and its subordinate units; the U.S. Army Pacific Command; the 45th Corps Support Group (Forward); and a variety of combat support and sustainment units. USAG-HI has the capability of hosting a variety of joint training exercises and provides the Pacific Command with the ability to train and deploy Soldiers rapidly from a forward positioned location.

Schofield Barracks Military Reservation (SBMR) is the main installation that would be impacted by the reduction of a BCT or potential gain in combat support units being considered. To a lesser extent Fort Shafter may be minimally impacted by small decrements or gains in Command and Control and combat support units. SBMR and Fort Shafter support administrative functions and garrison operations (office functions, vehicle and equipment maintenance, Soldier recreation and living quarters, etc.). SBMR includes the Schofield Barracks Main Post (SBMP), South Range, and Schofield Barracks East Range (SBER); however, throughout the analysis areas are identified by their more specific description (South Range and SBER), when appropriate. Troops are housed on main post at SBMR; and training would occur on all of these sites. Training would be conducted at a number of other training areas in Hawai`i, including Dillingham Military Reservation (DMR), Kahuku Training Area (KTA), Kawailoa Training Area (KLOA), and Wheeler Army Airfield on O'ahu. On the Island of Hawai`i, Combat Support units proposed for realignment as a result of implementation of Alternatives 1 and 2 would continue to support combat maneuver unit training rotations at Pohakuloa Training Area (PTA), which includes the West PTA and Bradshaw Army Airfield. Combat maneuver units conduct fire training exercises, indirect fires training, and aviation gunnery activities at PTA.

SBMR, South Range, and SBER accommodate Soldier weapons qualification activities and small unit maneuver training tasks, as well as provide the garrison infrastructure to house and administer Army units. Although no live fire currently occurs at KTA, training with Short Range Training Ammunition occurs here. No LFX are conducted on SBER; all exercises are limited to blank and pyrotechnic ammunition. The Army has established a 1,000-foot noise buffer zone during the day and a 2,000-foot noise buffer zone at night between the range and Wahiawa residential areas. The use of small arms blank ammunition is not authorized on select SBER ranges between 6 p.m. and 6 a.m.

Wheeler Army Airfield is in central O'ahu and is bordered by SBMR and SBER. Wheeler Army Airfield consists of 1,369 acres and provides administration, some housing requirements, maintenance, training, and flight facilities for military aviation units. 25th Infantry Division aviation support currently consists of two aviation battalions consisting of 108 helicopters, 280 military trucks, fuelers and service vehicles, and approximately 1,000 Soldiers stationed there.

KLOA consists of 23,348 acres, and is used primarily for helicopter training. Access to KLOA is limited due to unimproved roads, steep terrain, and dense vegetation. The training area is used by light infantry for mountain and jungle warfare training. Aviation units support insertions and conduct aerial maneuvers at the training site.

DMR is a 664-acre training site and has an active joint-use airfield. Portions of the reservation have been leased by the Hawai`i Department of Transportation, for civilian light aircraft use.

Approximately 354 acres are suitable for maneuver and field training. Infantry and other combat support units use DMR for small unit training exercises. Units use blank ammunition to rehearse their mission essential tasks.

KTA is a 9,398-acre maneuver site that is located on the northern end of O'ahu. It's the largest contiguous ground maneuver training area on O'ahu. The northern portion of KTA supports all tactical maneuver training scheduled on KTA. Training includes jungle warfare training, pyrotechnics, and air support training. KTA accommodates training exercises primarily through company level though some limited battalion training tasks can also be supported. A number of small drop zones are located on KTA and can be used to conduct small unit parachute drops.

PTA is the largest military training area in Hawai`i and consists of over 130,000 acres. The ordnance impact area consists of approximately 51,000 acres and extends from central PTA to the southern boundary of the training area. This area can accommodate the firing of all USAG-HI's training munitions and is used by other services to conduct live-fire training events. PTA supports large unit maneuvers (battalion and brigade) and provides a venue for combat units to conduct integrated live-fire and maneuver training with other types of units in an operational scenario. Currently, the Army is conducting an EIS to modernize training ranges to support collective live-fire and maneuver infantry training.[2] That EIS assumes that the numbers of Soldiers training at PTA would not exceed historically authorized levels and that, therefore, the traffic going to the installation would not change. If a need arose to increase the numbers of Soldiers traveling to PTA, it would be subject to further, site-specific NEPA analysis.

Attainment of operational readiness of Army units in Hawai'i is not currently dependent on the use of Makua Military Reservation (MMR) for live-fire exercises. Because MMR is not currently available for live-fire training, additional Army units, if stationed in Hawai'i, would need to perform live-fire training at other ranges. Commanders of newly stationed units might choose to use MMR for live-fire training if the range became available for that use in the future. For purposes of stationing decisions made as part of this analysis, it is assumed that MMR is not currently available for live-fire training purposes.

The locations of USAG-HI major training areas and their geographic locations, as well as the geographic location of PTA on the Big Island of Hawai'i are depicted in Figure 4.18-1 (O'ahu sites), and Figure 4.18-2 (Hawai'i sites).

4.18.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, USAG-HI does not anticipate any significant adverse environmental impacts as a result of the implementation of Alternative 1 (Force reduction of up to 8,000 Soldiers and Army Civilians) or Alternative 2 (Installation gain of 1,500 Soldiers) on either O'ahu or Hawai'i. USAG-HI does anticipate significant adverse economic impacts to employment and population with the implementation of Alternative 1. Table 4.18-1 summarizes the anticipated impacts to VECs from each alternative at SBMR and other locations on the Island of O'ahu. Table 4.18-2 summarizes the level of anticipated impacts from the implementation of stationing alternatives at PTA on the Island of Hawai'i.

[2] USAG-HI has published a Draft PEIS to evaluate potential impacts of range and Garrison training support infrastructure modernization (USAG-HI, 2011). Impacts of this PEIS are considered as part of the "reasonably foreseeable" cumulative effects analysis at the end of this section. No final decisions to implement alternatives in the PEIS have been made at this time.

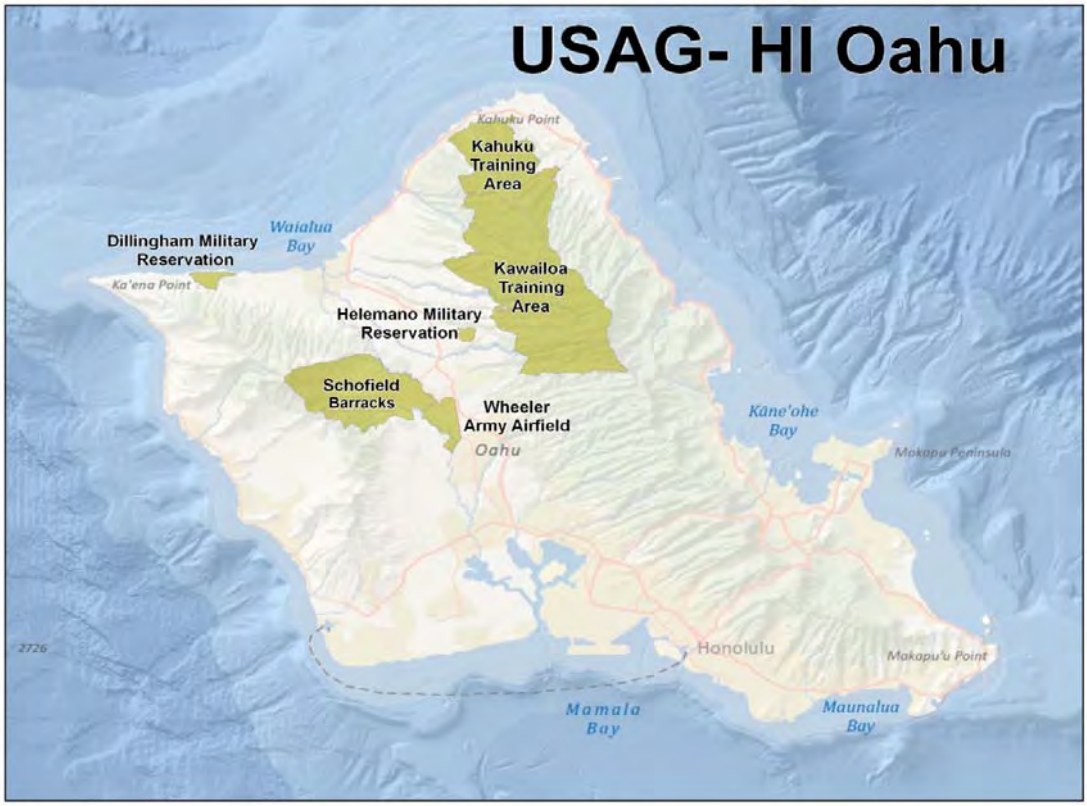

Figure 4.18-1. Schofield Barracks Military Reservation, O'ahu Training Sites

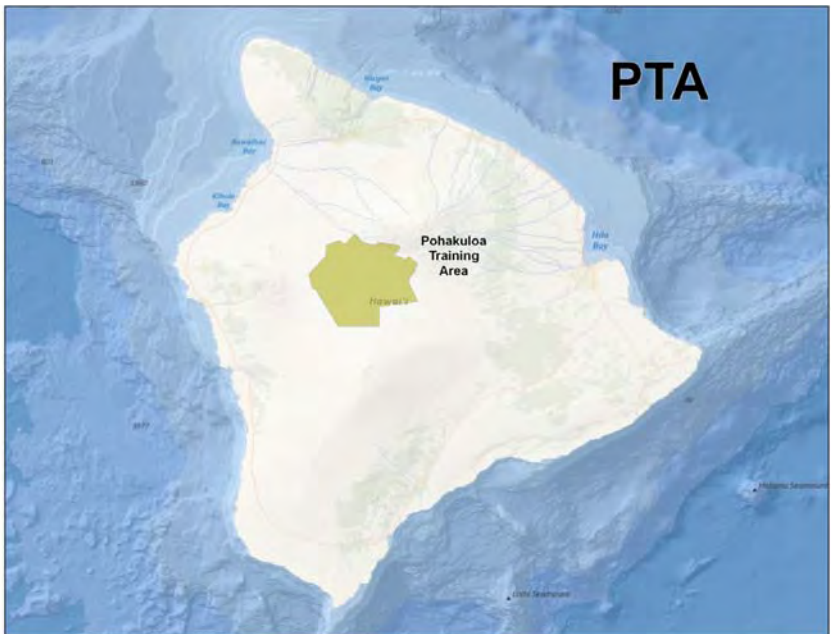

Figure 4.18-2. Pohakuloa Training Area Site

Table 4.18-1. USAG-HI (O'ahu) Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 8,000	Alternative 2: Growth of up to 1,500
Air Quality	Less than Significant	Beneficial	Less than Significant
Airspace	Minor	Beneficial	Minor
Cultural Resources	Significant but Mitigable	Significant but Mitigable	Significant but Mitigable
Noise	Significant but Mitigable	Beneficial	Significant but Mitigable
Soil Erosion	Significant but Mitigable	Beneficial	Significant but Mitigable
Biological Resources	Significant but Mitigable	Beneficial	Significant but Mitigable
Wetlands	Minor	Minor	Minor
Water Resources	Minor	Minor	Significant but Mitigable
Facilities	Minor	Beneficial	Significant but Mitigable
Socioeconomics	Minor	Significant	Less than Significant
Energy Demand and Generation	Less than Significant	Beneficial	Minor
Land Use Conflict and Compatibility	Less than Significant	Beneficial	Minor
Hazardous Materials and Hazardous Waste	Minor	Beneficial	Less than Significant
Traffic and Transportation	Significant but Mitigable	Beneficial	Significant but Mitigable

Table 4.18-2. USAG-HI (Pohakuloa Training Area) Valued Environmental Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 8,000	Alternative 2: Growth of up to 1,500
Air Quality	Less than Significant	Beneficial	Less than Significant
Airspace	Minor	Beneficial	Minor
Cultural Resources	Significant but Mitigable	Significant but Mitigable	Significant but Mitigable
Noise	Significant but Mitigable	Beneficial	Significant but Mitigable
Soil Erosion	Significant but Mitigable	Beneficial	Significant but Mitigable
Biological Resources	Significant but Mitigable	Beneficial	Significant but Mitigable

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 8,000	Alternative 2: Growth of up to 1,500
Wetlands	Negligible	Minor	Negligible
Water Resources	Minor	Beneficial	Less than Significant
Facilities	Minor	Beneficial	Significant but Mitigable
Socioeconomics	Minor	Negligible	Negligible
Energy Demand and Generation	Less than Significant	Beneficial	Minor
Land Use Conflict and Compatibility	Less than Significant	Beneficial	Minor
Hazardous Materials and Hazardous Waste	Minor	Beneficial	Less than Significant
Traffic and Transportation	Less than Significant	Beneficial	Less than Significant

4.18.2 Air Quality

4.18.2.1 Affected Environment

The ROI for air quality is dependent upon the pollutant and source of emission under consideration. The ROI for a regional secondary pollutant such as O_3 is generally the entire island (O'ahu or Hawai'i) and is not emitted directly but transformed through chemical reactions in the atmosphere; whereas, the ROI for primary pollutants may extend no more than a few miles away from the source (depending on the source and meteorological conditions). Primary pollutants may be diluted and dispersed by wind, resulting in lower pollutant concentrations at greater distances away from the source.

Major air emission sources in Hawai'i include the burning of sugar cane and emissions from volcanic activity and geothermic development. Hawai`i operates nine ambient air quality monitoring stations on O'ahu, and five stations on Hawai`i. Each air quality monitoring station is located at or near urban areas and each in coastal regions; many of which function to either monitor volcanic emissions or industrial activities. None of the nine stations are located near Army training areas.

Air pollution levels in Hawai`i are generally low due to the state's small size and location; therefore, upwind areas do not significantly contribute to background pollution levels, and locally generated air pollutants are generally transported offshore and away from land areas. Intermittent high concentrations of suspended PM can occur in some areas, primarily due to agricultural burning or fireworks use during holiday celebrations. The entire state is classified as being in compliance with federal ambient air quality standards, and thus is designated as an attainment area.

Hawai`i has adopted ambient air quality standards that are in some areas more stringent than the comparable federal standards and address pollutants that are not covered by federal ambient air quality standards. Hawai`i has established significant ambient air concentration thresholds and criteria for HAPs (Hawai`i Administrative Rules Title 11, Chapter 60.1, Chapter

179). These are applied under the permit review process for emission sources that require state or federal air quality permits. These thresholds and criteria are found in Table 4.18-3.

Table 4.18-3. State and National Ambient Air Quality Standards Applicable in Hawai'i

Pollutant	Averaging Times	State Standards	Federal Standards	Units
Carbon Monoxide	1-hour	9	35	ppm
		10,000	40,000	µg/m³
	8-hour	4.4	9	ppm
		5,000	10,000	µg/m³
Nitrogen Dioxide	Annual (Arith. Mean)	0.04	0.053	ppm
		70	100	µg/m³
Sulfur Dioxide	3-hour	0.5	0.5	ppm
		1,300	1,300	µg/m³
	24-hour	0.14	0.14	ppm
		365	365	µg/m³
	Annual (Arith. Mean)	0.03	0.03	ppm
		80	80	µg/m³
Ozone	1-hour	-	0.12	ppm
	8-hour	0.08	0.08	ppm
		157	157	µg/m³
Particulate Matter (less than or equal to 10 micrometers)	24-hour	150	150	µg/m³
	Annual (Arith. Mean)	50	Revoked	µg/m³
Lead	Quarterly Average	1.5	1.5	µg/m³
Hydrogen Sulfide	1-hour	0.025	-	ppm
		35	-	µg/m³
Particulate Matter (less than or equal to 2.5 micrometers)	24-hour	-	35	µg/m³
	Annual (Arith. Mean)	-	15	µg/m³

Source: HDOH, 2001
ppm = parts per million; µg/m3 = micrograms per cubic meter
Notes:

- All standards, except the national PM_{10} and $PM_{2.5}$ standards, are based on measurements corrected to 25 degrees Celsius and 1 atmosphere pressure.
- The national PM_{10} and $PM_{2.5}$ standards are based on direct flow volume data without correction to standard temperature and pressure.
- The "10" in PM_{10} and the "2.5" in $PM_{2.5}$ are not particle size limits; these numbers identify the particle size class (aerodynamic diameter in microns) collected with 50 percent mass efficiency by certified sampling equipment. The maximum particle size collected by PM_{10} samplers is about 50 microns. The maximum particle size collected by $PM_{2.5}$ samplers is about 6 microns.
- For noncarcinogenic compounds, an 8-hour average concentration equal to 1 percent of the corresponding 8-hour threshold level value adopted by the Occupational Safety and Health Administration (OSHA).
- For noncarcinogenic compounds, an annual average concentration equal to 1/420 (0.238 percent) of the 8-hour threshold level value adopted by OSHA.
- For noncarcinogenic compounds for which there is no OSHA-adopted threshold level value, the Director of Health is authorized to set ambient air concentration standards on a case-by-case basis so as to avoid unreasonable endangerment of public health with an adequate margin of safety.
- For carcinogenic compounds, any ambient air concentration that produces an individual lifetime excess cancer risk of more than 10 in 1 million assuming continuous exposure for 70 years.

The closest monitoring station is located approximately 6 miles away from Schofield at Pearl City. Recent monitoring data from that source show that ambient air quality records are generally well within state and federal ambient air quality standards. In recent years, concentrations of PM measured at 10 and 2.5 µm (PM_{10}) and ($PM_{2.5}$) have exceeded state or federal 24-hour $PM_{2.5}$ standards on 1 to 2 days per year; however, at no time in these 3 years was the federal 24-hour PM_{10} standard exceeded.

Schofield Barracks is a "major source" and maintains a Title V air permit. Individual emissions sources that contribute to the Schofield Barracks' overall status include boiler systems, generators for backup power, and various equipment operations,

The closest air quality monitoring station is located on the south side of O'ahu. The major military activities contributing to air emissions at DMR include vehicle traffic and aircraft flight operations. The Army only uses the airfield at DMR for approximately 3 percent of total annual flight operations (mainly for refueling and rearming OH-58D helicopters during flight operations). The airfield is primarily used by private aircraft. Live-fire activities are not conducted at DMR; however, the Army does use blank ammunition and ground-based smoke devices during training exercises. Meteorological conditions at DMR are monitored from a weather station located between DMR and MMR.

The primary sources of air emissions at these locations include vehicle traffic, aircraft flight operations (helicopters mainly), and training munitions. These activities are presently intermittent at both KTA and KLOA. Most training at KLOA involves dismounted Soldier maneuver and helicopter operations. The Army operates a remote weather station at KTA that is used primarily to monitor conditions in the context of fire management. Historical data show an average wind speed of 13.7 mph and a maximum average hourly wind speed of 34 mph. The hourly average wind speeds exceeded 9.9 mph approximately 75 percent of the time and (specifically at KTA) exceeded the 15 mph threshold commonly associated with wind erosion processes approximately 40 percent of the time.

4.18.2.2 Environmental Consequences

No Action Alternative

Under this Alternative, the impacts from Army activities at Schofield Barracks and O'ahu training and at PTA would remain less than significant. Conditions described in the affected environment would not change, other than as discussed below as a part of pre-existing trends and the ongoing actions. Title V permit conditions and air quality would continue to be monitored to ensure compliance with air emissions standards, but no changes to emission sources are anticipated, other than those mandated by maintenance, replacement, or elimination of sources as they age or are removed from service. The impacts from Army activities at Schofield Barracks and O'ahu training areas and at PTA would remain less than significant. No additional cantonment construction is required in USAG-HI other than that which is currently ongoing or planned. With the limited amount of future construction projects, the garrison anticipates less than significant impacts at both PTA and on O'ahu. The garrison has critical facilities available to support existing units' living, administrative, and vehicle maintenance requirements. Some construction, demolition, and renovation would continue to occur to support maintenance and management of facilities on an as needed basis in the future. The impacts from range infrastructure construction, live-fire training, and maneuver training would remain less than significant.

Less than significant impacts are anticipated from continued actions the Army is taking in Hawai'i under the No Action Alternative, although adverse impacts to air quality are anticipated from both mobile and stationary emission sources in addition to naturally occurring activities. It

is not anticipated that continuation of the status quo would result in a violation of air quality standards in Hawai'i or on O'ahu, or cause surrounding communities to violate such standards.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

The loss of a brigade and other support units would result in beneficial impacts to air quality on O'ahu and Hawai'i as a result of the implementation of Alternative 1. There would be additional near-term minor impacts to air quality from an increase in demolition and a more rapid implementation of the Army's FRP. The impacts associated with live-fire training are anticipated to also be beneficial as there would be less threat of wildfire and therefore less resultant air emissions from wildfire. Long-term effects from reduction of units within USAG-HI would include a decrease in stationary source emissions such as from boiler units and generators. Localized emissions from the live fire of small arms weapons would decrease; however, rifles and machine guns generally have very low emissions rates.

A decrease in maneuver activities would occur resulting in a decrease of opacity or fugitive dust emissions, and vehicle emissions, including PM, CO, and O_3.

In summary, an overall reduction in both stationary and mobile source emissions from reduction in training and construction would occur, and impacts on the islands of O'ahu and Hawai'i would be beneficial to air quality. GHG emissions would also decrease.

Alternative 2: Installation gain of up to 1,500 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be a less than significant impact on air quality in the airsheds surrounding the islands of O'ahu and Hawai'i. While adverse impacts to air quality are anticipated from additional mobile and stationary air emission sources, additional emissions would not result in a violation of air quality standards in Hawai'i or an exceedence of SBMR's current Title V permit.

Short-term and long-term impacts are anticipated as a result of this stationing alternative. SBMR's main post does not currently have additional vacant space and housing needed to support an additional 1,500 Soldiers and their Families. Army Housing in Hawai'i is privatized and currently at 98 percent occupancy. Construction would be required to meet shortfalls in HQ buildings, barracks, and other facility types. Construction at SBMR would involve the demolition of existing facilities to provide a footprint for new construction.

NO_x emissions are of concern primarily as an O_3 precursor. Even though construction emissions would increase, annual emissions of O_3 precursors from construction activities associated with construction as a result of all stationing alternatives would be too small to have a measurable effect on O_3 levels. Generation of GHG emissions would increase with additional Soldiers and Family members and additional facilities. The increase in GHG emissions would not be anticipated to increase by more than 3 to 5 percent from current USAG-HI operations.

Impacts to air quality from construction would be temporary, occurring during the 12-24 months of facilities construction. Vehicle emissions and fugitive dust generated by heavy construction equipment and materials transport may have short-term impacts that are anticipated to be less than significant. Construction contractors would comply with rules on fugitive dust. Units would utilize existing or previously planned weapons qualification ranges on which to train; therefore, limited minor impacts are anticipated. This alternative would not involve new training range construction at SBMR or training sites on O'ahu or at PTA. Ranges would continue to be maintained through routine maintenance activities.

***Live-Fire Training*.** Soldiers would conduct additional live-fire and maneuver training as a result of this alternative. Minor impacts from additional live-fire training are anticipated. Soldiers would conduct live-fire training to meet semi-annual live-fire training requirements. Live-fire

activities and munitions expenditure on SBMR and O'ahu training site ranges would increase less than 10 percent in comparison to current live-fire training levels. This would result in minor impacts. At SBMR and South Range, the emissions released into the environment from live-fire training would result from the use of small arms weapons such as M-16 and M-4 rifles; crew served weapons such as machine guns; and explosive munitions. Frequency of wildfires could increase with additional live-fire training and could increase wildfire emissions.

Rifles and machine guns have very low emissions rates; while smokes may lay an obscuration cloud with surface concentrations of 4 to 260 milligrams per square meter, these clouds are generally dispersed quickly (depending on wind speed and direction). Air emissions from firing qualifications are released at the firing point. These emissions are anticipated to be relatively minor and are found at the EPA's Technology Transfer Network Clearinghouse for Inventories & Emissions Factors, AP42, Fifth Edition, Volume I (EPA, 2009). At DMR, smoke, obscurant, and flare use would increase as result of this alternative. Based on the studies conducted by the Army and addressed in Air Pollutant Emission Factors (AP42s) published by the EPA, there would be a very low risk of emissions generated from these training devices. At KTA and SBER, the use of some pyrotechnic devices may be employed, but due to their low annual utilization rate and air emission rates, the use of these devices is not anticipated to have significant effects to air quality. Only blank ammunition, which poses very little risk of creating adverse air quality effects, is used at KLOA. Live fire and other training activities would increase the risk of wildfires in proportion to the percentage increase in training munitions use, and increase the risk of wildfire associated air pollutant emissions (for example polycyclic aromatic hydrocarbons). Based on the general nature of detonation processes and the very low emission rates that have been published in studies of munitions firing and open detonations, emissions associated with increased ordnance use at DMR would contribute only minor air emissions in comparison to current baseline conditions.

***Maneuver Training*.** Additional maneuver training could result in significant but mitigable impacts on O'ahu training sites and at PTA. As a result of the implementation of this alternative, limited maneuver training would occur across the training areas of USAG-HI to include KTA, SBMR, South Range, SBER, KTA, and KLOA. Units would conduct training on the Island of O'ahu and Hawai'i to obtain proficiency in individual unit skills and would support maneuver rotations of combat units at PTA. Unit maneuvers are anticipated to increase by approximately 10 percent on O'ahu maneuver training areas. Air quality impacts from this alternative are significant but mitigable. Vehicle training would occur primarily on roads, trails, maneuver areas, or hardened surfaces and would increase the occurrence of opacity or fugitive dust emissions; however, these effects are anticipated to be localized to the range area. Vehicle emissions would also add to the pollutants currently being released in maneuver areas including PM, CO, SO_x and other reactive organic compounds. The overall increase in these compounds would correlate highly with the number of increased Maneuver Impact Miles (MIM) resultant from implementing stationing alternatives. The amount of off-road vehicle activity would increase due to proposed training activities. Off-road vehicle activity would reduce vegetation cover in affected maneuver training areas of PTA, SBMR, KTA, DMR and South Range Acquisition Area, resulting in increased susceptibility to fugitive dust emissions from vehicle travel and wind erosion. PM_{10} would be generated by these actions at the affected areas. If a need arose to increase in numbers of Soldiers traveling to PTA, it would be subject to further, site-specific NEPA analysis.

Significant impacts are not anticipated from the stationing of additional Soldiers, although adverse impacts to air quality are anticipated from both mobile and stationary emission sources. Additional stationing or mobile source emissions would not result in a violation of air quality standards in Hawai'i or an exceedence of SBMR's Title V permit. Neither would the action

cause surrounding communities to violate such standards. Further analysis would be necessary to quantify these impacts if 1,500 additional Soldiers were to be stationed in Hawai'i. Mitigation includes: revegetation projects involving site preparation, liming, fertilization, seeding or hydroseeding, tree planting, irrigation and mulching. These actions reduce the impact to less than significant.

4.18.3 Airspace

4.18.3.1 Affected Environment

The airspace above the Island of O'ahu is generally controlled airspace. The area around Honolulu International Airport is Class B airspace; while other airports on the island are covered by Class D airspace. Wheeler Army Airfield in central Hawai`i is also covered by Class D airspace with a ceiling of 3,300 feet. Although there are no formal military training routes on O'ahu, the military habitually uses select areas within which to train. Typical training activities include 10 helicopters at any one time, although maximum numbers have reached 36 aircraft. During deployment training C-130 aircraft also utilize airspace in and around O'ahu. The Island of O'ahu also has several areas designated as SUA. Uncontrolled (Class G) airspace exists from the surface to up to either 700 or 1,200 feet above MSL over O'ahu in select locations.

Most of the airspace above the northern half of Hawai'i Island is controlled airspace of various classes. Class G (uncontrolled) airspace extends from the surface to 700 feet, except around Kona and Hilo International Airports and Bradshaw Army Airfield, which are surrounded by Class D airspace. The Restricted Airspace that overlays PTA (R3103) extends from the surface to 30,000 feet. Restricted areas contain airspace identified by an area on the surface of the earth within which the flight of aircraft, while not wholly prohibited, is subject to restrictions. Activities within these areas must be confined because of their nature, and limitations imposed upon aircraft operations that are not a part of those activities or both. Restricted areas denote the existence of unusual, often invisible, hazards to aircraft such as artillery firing, aerial gunnery, or guided missiles. Penetration of restricted areas without authorization from the using or controlling agency may be extremely hazardous to the aircraft and its occupants. Restricted areas are published in the Federal Register, and constitute 14 CFR Part 73. The northern part of Hawai'i Island has one SUA area, the R-3103 restricted area over PTA in the central part of the island with an effective altitude of 30,000 feet and intermittent time of use.

Honolulu Combined Center Radar Approach Control controls this airspace. Projected annual use of PTA's airspace is based on the estimated number of sorties that would be conducted by the different participating aircraft types for U.S. Army and U.S. Marine Corps exercises and transient activities. These projections are based on analysis of the flight training requirements by service, respective subordinate units, and by aircraft type over a typical 12-month period.

Commercial traffic utilizes the low altitude en route airways as do general aviation aircraft on Hawai'i Island. This includes all civil aviation operations, other than scheduled air services and unscheduled air transport operations for payment or hire. More than 50 percent of Kona International Airport's 281 average daily operations; 28 percent of Hilo International Airport's 316 average daily operations; and 78 percent of 'Upolu Airport's 27 average daily operations involved general aviation.

UAS flights primarily are conducted within previously designated restricted areas (e.g., R-3109 and R-3103). For UAS flights that could not be conducted entirely within restricted areas, operations occur in accordance with well-defined FAA procedures for remotely operated aircraft. These procedures include approval of the UAS flights by the FAA regional office in Honolulu at least 60 days in advance. Although CFAs pose no problems to flights, activities within a CFA

must be suspended immediately when radar, spotter aircraft, or ground lookouts detect an approaching aircraft.

4.18.3.2 Environmental Consequences

No Action Alternative

The impacts associated with aviation training, live-fire training and maneuver training with UAS and other aircraft would continue to be minor and would not conflict with civilian aviation or have new impacts on airspace. No change to existing maneuver training on O'ahu ranges would occur. With respect to airspace resources, the No Action Alternative would include flights by UAS associated with units presently stationed on O'ahu. Continued maneuver training of ground-based units (i.e., those without UAS) would have no effect on airspace at SBMR or O'ahu training sites. Helicopter flights between O'ahu training sites and PTA would continue. The use of CFA would continue when USAG-HI units are engaged in live-fire training. A CFA is pre-established above existing ranges. Overall, impacts to airspace would remain minor.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Impacts would be beneficial as a result of the implementation of Alternative 1. The use of airspace would not change significantly with the loss of ground units as a result of this alternative. Aviation and UAS would continue to require airspace to support training. The implementation of Alternative 1 would result in a slight and marginally lower utilization rate of existing military airspace as some units with UAS could be inactivated and no longer require activation and use of the airspace. No additional range expansion projects would occur as a result of this alternative. The use of CFAs would be anticipated to decline in proportion to the reduction in live-fire training events. Reduction in training would likely result in less utilization of general use airspace by the Army. Thus, adverse impacts of closures of SUA would be reduced. This could be considered a beneficial impact to members of the general aviation community. Maneuver training would occur at reduced levels, potentially resulting in less closures of SUA over military lands.

Alternative 2: Installation gain of up to 1,500 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be an anticipated minor impact with the increased use of airspace as a result of this alternative on both O'ahu and Hawai'i. Additional airspace would not be required, however, and scheduling, activation, and utilization of existing military airspace and general use airspace would proceed as it currently does without change. Maneuver training of additional ground-based units would have only minor effects to airspace at O'ahu training sites or on airspace usage at PTA. Although more CFAs would be activated, the Army ceases all live-fire activity when an aircraft is observed. Some additional UAS training (increase by up to 10 percent) may occur as a result of this alternative, but would not require any adjustments to current airspace use designations. Additional airspace is not required to accommodate the types of ground-based maneuvers associated with the proposed growth. Overall impacts from this alternative to airspace would be minor.

4.18.4 Cultural Resources

4.18.4.1 Affected Environment

Cultural resources are defined as historic resources, cultural items, archaeological resources, sacred sites, and collections (documents and artifacts). Cultural resources include prehistoric and historic archaeological sites, historic buildings and structures, and Native American or Native Hawaiian traditional resources. Native Hawaiian traditional resources are discussed as

areas of traditional interest, these categories include traditional resources, use areas, and sacred sites that are potentially eligible for the NRHP as TCPs. These resources are subject to protection under the NHPA, Archeological and Historic Preservation Act, NAGPRA, E.O. 13007 (Indian Sacred Sites), the ARPA, the guidelines on Curation of Federally Owned and Administered Collections (36 CFR Part 79), and other federal and state regulations and treaties. ARs implement Army compliance with the NHPA, NAGPRA, the AIRFA, the ARPA, the Archeological and Historic Preservation Act, E.O. 13007: Indian Sacred Sites; and other federal and state regulations and treaties.

The Cultural Resources Program at USAG-HI oversees the management of over 1,000 archaeological sites and 795 buildings on over 22 sub-installations on O'ahu and Hawai'i, including two NHL and two National Register Districts. The program also supports the requirements of the actions in compliance with programmatic agreements for the Privatization of Family Housing, the Transformation of the 2nd Brigade to a SBCT; and survey, and Routine Training Activities at MMR, Section 106 consultation and monitoring support for natural resources Biological Opinions and Implementation Plans.

Cultural resources on O'ahu include buildings, structures, sites, districts, landmarks, properties of traditional religious and cultural importance, sacred sites or objects from prehistoric or historic occupation or activities. Schofield Barracks contains a National Register District and almost the entire cantonment footprint of Wheeler Army Airfield is a NHL. Fort Shafter also contains a NHL, Palm Circle.

There are five cultural landscape types of significance to Native Hawaiian tradition and culture. These are 1) Areas of naturally occurring or cultivated resources used for food, shelter, or medicine; 2) Areas that contain resources used for expression or perpetuation of Hawaiian culture, religion, or language; 3) Places where historical and contemporary religious beliefs or customs are practiced; 4) Areas where natural or cultivated endangered terrestrial or marine flora and fauna used in native Hawaiian ceremonies are located, or where materials for ceremonial arts and crafts are found; and 5) Areas that provide natural and cultural community resources for the perpetuation of language and culture including place names and natural, cultural, and community resources for art, crafts, music, and dance.

Archaeological sites on O'ahu training sites are diverse and may include heiau (religious structures), koa (small shrines), fishponds, stone markers, fishing shrines, habitation sites, caves and rock shelters, mounds, burial platforms, earth ovens, stone walls and enclosures, agricultural terraces, canals or ditches, rock art sites, and trails. Historic period archaeological sites include gun emplacements, concrete structures and bunkers, concrete walls, wooden structural remains, masonry platforms, concrete revetments, bermed depressions, berms and rock piles, tunnels, miscellaneous feature complexes, road beds, railroad remnants, and midden deposits.

The central plateau where SBMR is located is of religious and cultural significance to Native Hawaiians, and numerous traditional natural settings exist in the area. Hawaiians lived in the central plateau of O'ahu hundreds of years before European contact. The boundaries of SBMR correspond roughly to the traditional Hawaiian land unit called Waianae Uka, a land-locked portion of the ahupuaa of Waianae. Waianae Uka was somewhat isolated from the rest of its ahupuaa, and the trail that connected Waianae Uka with Waianae Kai (coastal portion) by way of Kolekole Pass was strategically important. Archaeological evidence indicates the presence of traditional Hawaiian agricultural field systems, both dryland and irrigated taro wetland fields (lo'i) along the streams that flow through SBMR.

Archaeological surveys have been completed in the SBMR cantonment area, south, east and west ranges and Wheeler Army Airfield. Investigations have documented more than 250

archaeological sites. All identified cultural resources are treated as eligible to the NRHP until formal determinations of eligibility are made for the NRHP.

If construction is required, the Army would take every precaution to identify and avoid impacts to cultural resources. USAG-HI conducts additional cultural resource surveys on lands that may be affected by future construction, prior to earth disturbing activities.

Traditionally, important places in the area of DMR are associated with spiritual beings, myths, legendary stories, and oral histories along the shoreline, on the upper slopes of the mountains above the installation, and in Kaena to the west. Archaeological evidence of prehistoric land use and settlement on DMR is extensive. Native Hawaiians buried their dead in a line of sand dunes along the coast fronting DMR. Along the slope at the foot of the Waianae Mountains are several agricultural features indicating crop cultivation in the area. Part of the slope area was set aside as a sacred place on which Kawailoa Heiau was constructed (USAG-HI, 2004). The entirety of DMR has been surveyed for archaeological sites. Twenty-four sites have been identified. Nine of the sites contain prehistoric or traditional components and one of these sites is very extensive. The remainder are historic sites related to agriculture, transportation, and military use (USAG-HI, 2004). Surveys covering the historic built environment at DMR occurred in the 1990s. These surveys identified 21 buildings associated with a Nike missile site. All but five of these have been demolished. No TCP surveys or oral histories have been completed for the DMR. NRHP eligibility determinations for the DMR sites are currently underway.

KTA is on the northernmost point of the traditional Koolauloa District. Legends hold that this land was once a separate island. Many traditional stories are associated with this land (USAG-HI, 2004). The KTA area has been occupied at least seasonally since the 14th century; evidence of early occupation includes rockshelters, burials, irrigation complexes, and habitation sites. In the late 17th century, there was a more intensive settlement of the upper valleys (USAG-HI, 2004). Past surveys conducted by the Army have located 172 archaeological sites on KTA and 79 sites on KLOA. One of the sites at KTA is a heiau that is listed on the NRHP. The other KTA sites are currently being evaluated for eligibility to NRHP. A variety of Cold War era buildings and structures exist on KTA. The buildings and structures are principally part of the NRHP-eligible Nike missile complex that was in use between 1961 and 1970, but is no longer accessible or used. The NIKE Site, no longer in active use, is being maintained until another use can be determined for it. As noted earlier, all identified cultural resources are being treated as eligible for the NRHP and appropriately protected until formal determinations are made.

At PTA, over 40 archaeological investigations have been conducted, with most of the studies occurring during the mid-1980s and 1990s. Many previous studies covered large areas by helicopter survey, which only identifies very large sites. Site types identified at PTA include transportation features (trails and trail markers); occupation sites (lava tubes, blister caves, and overhang shelters); lithic resource sites (e.g., chill glass quarries and workshops); ritual/ceremonial sites (indicated by upright stones); excavated-pit features; historic features (walls, enclosures); and military modifications/impacts More than 500 archaeological sites have been identified at PTA and surveys are on-going. Additional surveys are being conducted as part of the ongoing EIS for PTA range development.

PTA is part of a larger cultural landscape that includes the sacred mountains Mauna Kea and Mauna Loa and the Saddle area between them. The area is spiritually and historically one of the most important places in Hawaiian tradition and history. The importance of Mauna Kea, Mauna Loa, and the surrounding landscape can be seen in the abundance of physical or archaeological remains and through the many oral histories that describe historical events and uses of the area (Maly 1999; Maly & Maly 2002, 2004, 2005). The region around PTA contained a rich resource

zone that supported traditional activities that included bird hunting for feathers and meat, quarrying volcanic glass, and lithic workshop locations for manufacturing the adzes made from Mauna Kea basalt. The Saddle region has numerous trails and served as a much-used passage for travelers moving both cross-island and to the Mauna Kea and Mauna Loa summits. Cave shelters are abundant due to the extensive natural lava tube systems in the area. These cave shelters provided refuge from the elements and, because there is relatively low rainfall within the region, served as a source of limited water. Archaeologists speculate that ancient Hawaiians practiced various economic activities in this uplands area. Radiocarbon dating of PTA sites (primarily caves) indicates occupation between the 12th and 18th centuries.

4.18.4.2 Environmental Consequences

No Action Alternative

There would be no additional impacts to cultural resources under the No Action Alternative. Impacts would remain significant but mitigable.

Despite ongoing surveys and the implementation of protective measures and post-training monitoring of known sites by cultural resource personnel, there remains a potential for impacts to undocumented sites. The use of live-fire ranges, even at existing levels, would remain a potential cause of impacts to cultural resources. Mechanisms and procedures are in place to monitor the effects of operations, maintenance, and training exercises, and to respond to any unanticipated discoveries. The Army would continue to inventory and evaluate cultural resources in compliance with Section 110 of the NHPA, and project planning would comply with Section 106 and its implementing regulations.

Significant but mitigable impacts to cultural resources could occur. There would always be some chance of inadvertently discovering cultural resources; however, advance coordination with the USAG-HI Cultural Resources program would and does minimize potential impacts. USAG-HI would continue to manage its lands to minimize risk to inadvertent loss of cultural resources, respect the cultural practices and traditions of the Hawaiian people, and afford protections to the cultural integrity of the Hawaiian landscape.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Significant but mitigable impacts are anticipated with this alternative at USAG-HI. Building demolition, solid waste disposal, site recapitalization, and repurposing of existing facilities to assist the Army in efficiently managing its infrastructure and operating costs, while supporting its Soldiers could potentially disturb or damage archaeological resources, or could alter properties and districts. Any demolition or repurposing activity occurring in or adjacent to the Historic District and/or NHL would require Section 106 consultation. USAG-HI would avoid potential impacts to known archaeological resources during planning for potential cantonment area modification. If impact could not be avoided, measures to minimize or mitigate adverse impacts to archaeological resources would be developed through the NHPA Section 106 consultation process. All activity associated with this alternative would occur on previously disturbed ground. Thus, adverse impacts to archaeological resources are unlikely.

Alternative 1 could result in the modernization and re-purposing of outdated range infrastructure to accommodate new training requirements on facilities that are no longer needed by Army units as a result of force reduction. Construction activity would involve grading and re-grading site surfaces, grubbing vegetation, and using heavy equipment to excavate the subsurface during range repurposing activities. Although these repurposing projects would be located on previously disturbed ground, construction activities have the potential to result in damage to yet-to-be discovered cultural resources. USAG-HI would attempt to avoid potential impacts to cultural resources during facility planning. If impacts could not be avoided, measures to

minimize or mitigate adverse impacts to cultural resources would be developed through the NHPA Section 106 consultation process. There are no specific range projects identified in this category, and any such projects would be the subject of further NEPA analysis.

The frequency and intensity of maneuver training would decrease as a result of this alternative. All remaining maneuver training would be conducted within the footprint of existing ranges and trails at USAG-HI; however, any impacts resulting from maneuver training to undocumented cultural resources would be reduced given the lower amount of Army training occurring as a result of this alternative. While this component of the alternative would result in a long-term reduction of risk to cultural resources and a beneficial impact, overall impacts as a result of implementation of the alternative would remain significant but mitigable.

Alternative 2: Installation gain of up to 1,500 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

This level of growth on USAG-HI is anticipated to have a significant but mitigable impact to cultural resources. Measures are being developed or are in place to accommodate training while preventing adverse impacts to cultural resources. The types of training conducted by the additional Soldiers would not change, though some training areas on USAG-HI might be used with marginally more frequency or intensity compared with current baseline conditions.

Garrison construction supporting the growth stationing scenario could disturb or damage archaeological resources, or could alter landmarks and districts. Infill construction in the main post and any associated demolition of facilities to make room for new construction within USAG-HI's current cantonment areas, primarily at SBMR, Wheeler Army Airfield and Fort Shafter, may result in an adverse effect. USAG-HI would attempt to avoid adverse effects to cultural resources during planning for potential cantonment construction. If impact could not be avoided, measures to minimize or mitigate adverse impacts to cultural resources would be developed through the NHPA Section 106 consultation process.

All cantonment construction associated with Alternative 2 would likely occur on previously disturbed ground. The Army would attempt to avoid adverse impacts to the Wheeler NHL buildings and structures, the Fort Shafter NHL at Palm Circle, and the Schofield Barracks Historic District. Siting new facilities in new locations of cantonment areas may require additional surveys for archaeological resources. The garrison would avoid building on known sites and would conduct Section 106 consultation with the SHPO, the Office of Hawaiian Affairs, and appropriate Native Hawaiian organizations/individuals as required.

Construction of additional training range areas, if required, would involve grading and re-grading site surfaces, grubbing vegetation, and using heavy equipment to excavate the subsurface during new range infrastructure construction. Expansion of some ranges may be required, though the construction of new additional ranges is not projected to be a requirement to support this alternative. Although range expansion projects would ideally be located on previously disturbed ground, construction activities have the potential to result in damage to yet-to-be discovered cultural resources. USAG-HI would avoid potential impacts to cultural resources during planning for potential range infrastructure construction. If impacts could not be avoided, measures to minimize or mitigate adverse impacts to cultural resources would be implemented through the NHPA Section 106 consultation process.

Live-Fire Training. Negligible impacts from live-fire training are anticipated. Any range expansion and new targetry would be sited to avoid cultural resources. The Army would conduct the appropriate level of site-specific NEPA analysis in conjunction with any future range proposals. No specific range expansion projects are currently known to be required for implementation of Alternative 2 at this time.

Combat Support Units. Stationing scenarios involving Combat Support units, particularly engineer or combat engineer units, may involve some surface excavation, which could potentially uncover or damage undocumented cultural resources. If impact could not be avoided, measures to minimize or mitigate adverse impacts to cultural resources would be implemented through the NHPA Section 106 consultation process.

Maneuver Training. Potential impacts from maneuver training would be the most widespread impacts associated with the implementation of Alternative 2 across training areas in USAG-HI. Maneuver training activities would be anticipated to increase by approximately 10-15 percent. Additional combat units, combat support units, and combat engineers would engage in surface excavation activities and demolitions at select areas on O'ahu (SBMR, KTA, DMR and KLOA) and at PTA. These activities would occur within areas that have been surveyed and designated as appropriate for this type of activity. New units would primarily maneuver on existing roads and trails and are not projected to do much off-road or trail maneuver or surface excavation. Maneuver activities for these scenarios have been assessed as less than significant impacts. Maneuvers would be restricted around known archaeological sites.

Overall, significant but mitigable impacts to cultural resources would be anticipated to occur with the implementation of Alternative 2. There would always be a minor risk of inadvertently discovering unknown cultural resources; however, advance coordination with the USAG-HI Cultural Resources program would and does minimize potential impacts. USAG-HI would continue to manage its lands to minimize risk to inadvertent loss of cultural resources, respect the cultural practices and traditions of the Hawaiian people, and afford protections to the cultural integrity of the Hawaiian landscape.

The primary mitigation is the avoidance of sites so impacts would be minimized. Areas around known sites are designated as no-use areas for maneuver training and protective measures would be placed around sites to avoid impacts from training. There would be regular monitoring of known sites by cultural resource personnel after training activities to ensure that the site protection measures are working and to adjust protection, if needed. If sites cannot be avoided, appropriate mitigation measures that may include data recovery would be implemented after appropriate consultation.

The Army has been working to mitigate adverse effects to cultural resources by redesigning projects to avoid cultural resources, developing and implementing cultural resource site protection plans for construction and UXO clearance, monitoring earth disturbing activities when appropriate, and developing long-term site protection measures. The Army would engage in Section 106 consultations regarding various aspects of the proposed projects, to include appropriate mitigation measures as siting/design plans continue to develop.

4.18.5 Noise

4.18.5.1 Affected Environment

The principal sources of noise at Schofield Barracks, O'ahu training ranges, and PTA include vehicle traffic, small and large caliber weapons and artillery firing, and helicopter flights which are heard at locations outside the installation boundary (PHC, 2010). Noise from firing of large caliber weapons firing affects most of Schofield Barracks; and individual detonations are audible in residential areas near the boundaries of the installation.

At SBMR, the majority of the small arms firing training noise contours remain within the SBMR boundary with only the NZ II noise contour extending off post into areas of agricultural and preservation land uses (PHC, 2010). The Army's noise computer modeling program for small arms noise, cannot take into account reflection or absorption of terrain, so the actual levels

existing beyond the installation boundary may well be less than 87 dB peak sound pressure level (PK15(met)) due to the mountainous terrain surrounding the majority of the installation. The NZ III noise contours are contained within the installation boundaries; however, a portion the RCI Housing is contained within NZ II. There are no non-recommended land uses off post within the NZ II noise contour, but there are non-recommended land uses on post within the NZ II noise contours in the RCI housing area.

SBMR is also impacted by low frequency noise from large caliber weapons firing and artillery. The majority of the NZ III noise contours are contained on post except for an area approximately 360 meters off post to the north in an agriculturally zoned area (PHC, 2010). The NZ II and LUPZ noise contours extend off post to the north and south, but are contained entirely within agricultural and restricted preservation zoned areas. There are no incompatible land uses off post within the NZ II or NZ III noise contours. On post, the NZ II and LUPZ noise contours overlap the RCI housing area located east of installation artillery firing points. There are non-recommended land uses on post (RCI Housing) within the NZ II. The moderate risk of complaints (115-130 PK15(met)) noise contour from existing operations training at SBMR overlaps in the Town of Wahiawa. On post, the high risk of complaints (greater than 130 dBA) noise contours overlaps the RCI housing area (PHC, 2010).

At SBMR, NZ II conditions encompass much of the cantonment area and extend into undeveloped areas to the north and south of the cantonment area; the exposure area for NZ II does include Solomon Elementary School and Hale Kula Elementary School (with the nighttime penalty factor). NZ II contours also extend approximately 985 to 1,300 feet to encompass additional Soldier and Family housing areas on the eastern part of the main post. Some undeveloped areas to the north and south of the post may also be affected (USACE, 2008a).

Aircraft activity at Wheeler Army Airfield also generates substantial noise energy. The NZ III noise contours are contained on Wheeler Army Airfield property except for a very small region that overlaps the SBER and is compatible with the noise environment. There are no incompatible land uses on or off post within the NZ III noise contours (PHC, 2010). A 65-dBA L_{dn} contour around Wheeler Army Airfield extends into Leilehua Golf Course but not into any residential area. Aircraft flight noise at Wheeler Army Airfield also affects residential areas on and off post.

No live-fire training is conducted at SBER, only simulated training, pyrotechnic devices, and blank ammunition; East Range contains no impact areas or firing ranges.

At DMR, KTA, and KLOA the dominant noise sources include general aviation aircraft, vehicle traffic, limited military aircraft traffic, military vehicle traffic, and limited use of blank ammunition during Army exercises. Blank ammunition is primarily used at KLOA. Ordnance use at KTA consists primarily of blank ammunition and pyrotechnic devices (*FEIS for the Permanent Stationing of the 2/25th SBCT* (USAEC, 2008a)). Some noise effects from ordnance use at KTA may be experienced at nearby residential areas. At DMR, KTA and KLOA there are no activities generating NZ III level impacts that affect sensitive noise receptors; however, there have been occasional noise complaints from some training events that occur at DMR.

PTA is used for year-round LFX by all branches of the U.S. Military. The principal sources of noise on PTA are generated through small arms and large caliber weapons firing (PHC, 2010). Small arms training at PTA does not generate any NZ III noise contours that leave the installation boundary, nor do any NZ III impacts overlap any noise sensitive areas on post. The NZ II noise contour extends off post in a small area of forest reserve land and is acceptable and compatible for the noise environment. There are no incompatible land uses on or off post within the NZ II noise contour (PHC, 2010). Large caliber live-fire training NZ III contours are mostly contained within the installation boundary. The majority of the NZ III noise contours are

contained on post at PTA except for several small areas north extending approximately 150-200 meters in forest reserve land (PHC, 2010). The NZ II and LUPZ noise contours exist off post, but are contained entirely within forest reserve land. There are no incompatible land uses on or off post within the NZ II and NZ III noise contours. The risk of complaints off post would be extremely low or non-existent in the forest reserve area. The risk of complaints on post would be moderate in the PTA building and office area.

4.18.5.2 Environmental Consequences

No Action Alternative

As under No Action Alternative, the current levels of noise created by Army activities would not change from the conditions described in Section 4.18.5.1. Noise from live-fire and maneuver training, and aviation overflights would continue to be produced at existing levels, and are anticipated to remain significant but mitigable. Procedures to minimize aviation noise impacts and training noise impacts would continue to be implemented.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Impacts from noise are anticipated to be beneficial as a result of the implementation of Alternative 1. Existing ranges would still be utilized for firing the same types of weapons systems and conducting the same types of training. USAG-HI would experience an anticipated reduction in the frequency of noise generating training events, both from small arms firing and large caliber weapons and artillery firing as a result of this alternative. Noise contours and impacts would diminish. The number of weapons qualifications and maneuver training events could be anticipated to decrease by up to 30 percent. Noise impacts would likely remain comparable to current conditions, though less frequent leading to a reduced risk of noise complaints. The current frequency of aviation training activities, a contributor of noise at the installation, would not be anticipated to change more than marginally, as aviation units would not be impacted by these decisions.

Impacts from building demolition, site recapitalization, and the repurposing of existing facilities to accommodate different Army needs would be temporary. A decreased frequency of noise-generating events would correspond to the decreased maneuvers resulting from a reduction stationing scenario to include noise effects that would be produced from convoy travel on public roads.

Alternative 2: Installation gain of up to 1,500 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be a continued significant-but-mitigable impact on the installation and surrounding communities by the restationing of up to 1,500 Combat/Combat Support Soldiers. Stationing would not involve new aviation units and would therefore not contribute to noise impacts in and around Wheeler Army Airfield. Given that there are no new types of activities that would occur as a result of stationing these Soldiers, just an increase in the types of existing noise generating activities (an increase by 10-15 percent), no major changes are anticipated from baseline conditions of the affected environment.

Impacts from garrison construction would be temporary. Noise associated with construction would result mainly from the movement of vehicles and equipment. Noise associated with construction equipment generally produce noise levels of 80 to 90 dBA at a distance of 50 feet. Permissible noise exposures identified by the OSHA (29 CFR 1910.95) for an 8-hour work day is 90 dBA; therefore, construction noise in the cantonment area would likely be compliant with these levels. The zone of relatively high construction noise may extend to distances of 400 to 800 feet from major equipment operations; and those locations that are more than 1,000 feet

from construction sites generally do not experience significant noise levels; however, temporary noise impacts may occur to wildlife. These effects are discussed in Section 4.18.7.

Although there would be an increase in Soldiers maneuvering, the type of noise would be consistent with ongoing maneuver activities. The increased frequency of noise generating events would correspond to the increased maneuvers associated with these stationing scenarios (10 to 15 percent) at KLOA, SBER, DMR, and KTA. The noise effects that would be produced from convoy travel on public roads (when traveling between installations and maneuver sites) would be short term as these activities are intermittent and are usually mitigated through SOPs for convoy maneuver.

At SBMR, the Army anticipates a slight expansion of NZ II contours and some small changes in the location of NZ III contours within the SBMR ROI with the implementation of Alternative 2. NZs would impact additional Soldier and Family housing areas on the eastern side of the main post. NZ II would expand into some undeveloped areas north and south of SBMR, but are not anticipated to expand into existing off-post residential areas. Solomon Elementary School and Hale Kula Elementary School would remain within the NZ II noise contour. Some additional Family housing units would be encompassed by the NZ III contour in this area. The increase in noise levels would combine with existing noise that already represents a significant but mitigable impact.

Maneuver Training. Noise levels along on-post roadways and along military vehicle trails would increase; however, overall traffic volumes and vehicle speeds generally are low for these types of roadways. As a result, noise increments attributable to vehicle traffic would remain within the Army's land use compatibility guidelines. Traffic on military vehicle trails between SBMR and other installations would increase noise levels along the trail corridors during the periods of vehicle travel. Because there are no noise-sensitive land uses immediately adjacent to Helemano Trail, these noise levels would constitute a less than significant impact. Military vehicle maneuvers would occur along unpaved roads and in various off-road areas at SBMR and SBER. Peak pass-by noise levels would drop by 15 dBA at a distance of 500 feet from the travel path. Vehicle maneuvers would occur during both daytime and nighttime hours, making vehicle maneuver activity noise an issue of concern where residential land uses and school sites are close to SBER boundaries. Because vehicle speeds are low during most maneuver activities and vehicles tend to be relatively dispersed during off-road maneuvers, maneuver activities would be anticipated to produce hourly average noise levels of less than 55 dBA at a distance of about 500 feet, with brief peaks of 65 to 70 dBA. Such noise levels would not cause significant noise effects at off-post noise-sensitive land uses during daytime hours. These noise levels would be more disturbing during nighttime hours. The Army has established a 1,000-foot noise buffer along those portions of SBER that border residential areas of Wahiawa. As long as nighttime vehicle maneuver activity is minimized in this buffer area, vehicle noise from training and maneuver activities would be less than significant.

Vehicle maneuver training would occur at DMR. During an individual training activity at DMR, fewer than 75 vehicles are operating at any one time. Vehicle activity within DMR would produce comparably low noise levels. Consequently, noise from military vehicle use at DMR would constitute a less than significant impact. Most military vehicle travel to and from KTA and KLOA would occur on the Helemano Trail and Drum Road. In addition, vehicle maneuver activity would occur at KTA. During an individual training activity at KTA and KLOA, up to 241 vehicles are anticipated to be operating at any one time, with up to 216 vehicles using Helemano Trail and Drum Road to reach KTA. For the maximum number of vehicles, resulting hourly average traffic noise levels along Helemano Trail and Drum Road would be about 72 dBA at a distance of 50 feet from the vehicle trail and about 64 dBA at 200 feet from the vehicle

trail. Vehicle activity within KTA and KLOA would produce comparably low noise levels, so noise from military vehicle use at KTA and KLOA would constitute a less than significant impact.

Regulatory and Administrative Measure 1. Due to the proximity to housing units, the installation generally avoids using ranges beyond 2000 hours (8:00 p.m.). This stationing scenario may result in an increased need at SBMR to extend some range firing times beyond 2000 hours, which may have potential effects to nearby residents. As hours of live-fire operations may extend, an increased level of nighttime noise may be audible at Solomon Elementary School and Hale Kula Elementary School; however, because regular educational hours are during the daytime, and because the majority of elementary school extracurricular activities (including plays, recitals, or meetings) are likely to occur prior to 8:00 p.m., these impacts are not anticipated to affect school-related activities.

Regulatory and Administrative Measure 2. The noise effects that would be produced from convoy travel on public roads (when traveling between maneuver areas and their home station) would be short term, as these activities are intermittent and are usually mitigated through SOPs for convoy maneuver. A convoy is normally defined as six or more military vehicles moving simultaneously from one point to another under a single commander, 10 or more vehicles per hour going to the same destination over the same route, or any 1 vehicle requiring a special haul permit. Per command guidance, USAG-HI convoys normally maintain a gap of 15 to 30 minutes between serials (a group of military vehicles moving together), 330 feet between vehicles on highways, and 7.5 to 15 feet while in town traffic. Per state regulation, military convoys are not authorized movement on state highways during peak-hour conditions (between 6:00 a.m. and 8:30 a.m. and 3:00 p.m. and 6:00 p.m., Monday through Friday). Movements on Saturday, Sunday, and holidays would be by special request only. The garrison would continue to implement policies on convoy travel that would mitigate adverse effects from vehicle noise.

Regulatory and Administrative Measure 3. To abate aircraft noise, pilots are trained to avoid unnecessary over flight of populated areas as well as single houses. In order to gain public acceptance, all pilots are trained to be sensitive to the concerns of the surrounding communities. The 25th Infantry Division Aviation Officer has designated noise sensitive areas and procedures in the "Noise Abatement and Fly Neighborly" policy for Wheeler Army Airfield units. Procedures include:

- Operations at Wheeler Army Airfield from 2300L to 0600L daily are restricted to departures, arrivals, and refueling operations (no closed traffic).
- The only authorized landing areas on Schofield Barracks are Pad 4 and Dragon X. Landing at any other area requires coordination with the Assistant Division Aviation Officer and a safety survey by the supporting unit.
- Terrain flight training would be conducted only on the Schofield, Makua, Dillingham or Pohakuloa Military Reservations, or in a Tactical Flight Training Area.
- Overflight of designated noise sensitive areas below 3,000 feet MSL (O`ahu) or 2,000 feet AGL (Big Island) is prohibited except in specific cases outlined in the policy.
- Wheeler Army Airfield Base Operations would maintain a master map of all designated noise sensitive areas for the Island of O`ahu. Wheeler Army Airfield Base Operations would maintain a FY sequential log of changes to facilitate posting. Units would:
    - Post a copy of the map in their respective flight planning areas for pilot use. Wheeler Army Airfield Base Operations would alert units to additions and changes to the master map via Notices to Airmen.
    - Update their flight planning maps as Notices to Airmen are published.

  - Verify the updates from the master map quarterly (October, January, April, July) and would post the date updated on their unit map.

- When operating in areas other than the Tactical Flight Training Area, military reservations or designated noise sensitive areas, pilots would maintain a minimum of 1,000 feet AGL, with the following exceptions:
  - When complying with these altitudes would violate basic visual-flight-rules weather minimums. Pilots are urged to use alternate routes if weather would not permit flight at the published route altitude.
  - When conducting flights in support of civilian law enforcement or public safety agencies.
  - When on a Night Vision Goggle formation flight conducted over unpopulated areas (examples: Molokai and the Big Island). The route(s) must be reconned during daylight at the altitude to be flown Night Vision Goggle. The route(s) must a have a minimum of 2,000 feet lateral clearance from any populated or posted noise sensitive areas and a minimum of 1,000 feet lateral clearance from any single dwelling. Minimum Night Vision Goggle mission altitude would be 500 feet AGL. Approval authority for these Night Vision Goggle formation flights would be no lower than Battalion/Squadron Commander.
  - Overwater tactical flights may be conducted at less than 1,000-foot ASL when flown further than 0.25 nautical mile from the shoreline.
- Aircraft transitioning along shorelines would remain a minimum of 0.25 nautical mile off shore or 1,000 feet above the highest obstacle within 2,000 feet laterally, unless complying with conditions listed above.
- Intentional flight within 1,000 feet, vertically or laterally, of a whale or whale pod is prohibited by federal law. If flying below 1,000 feet above the surface and these animals are observed, alter flight path so as to avoid them by 1,000 feet.
- Pilots are reminded to avoid overflight of National Parks and Wildlife Refuges below 2,000 feet AGL.
- No over flight of livestock.
- Aircraft conducting external load missions would avoid overflight of built-up/populated areas.
- Intentional flight within 1,000 feet, vertically or laterally, of any surface vessel is prohibited.

4.18.6 Soils and Geology

4.18.6.1 Affected Environment

The topography of USAG-HI ranges from nearly flat to sloping, to steeply sloping terrain, dissected by mountain ranges. Soils generally consist of volcanic ash and silty clays, and are high in magnesium, calcium, and iron. The soils are moderately permeable with slow surface water runoff (U.S. Army, 1995). A brief description of soil characteristics and erodibility for the ROI is included in the paragraphs that follow.

The USAG-HI ITAM program is responsible for inventorying and monitoring land conditions, educating land users to minimize potential adverse impacts from use, integrating training requirements with land capacity, and implementing land maintenance and rehabilitation projects. The garrison manages the soils primarily by managing natural water run-off rates,

erosion, and sedimentation in streams and other waterbodies to ensure the continued and sustainable use of resources.

The main post of SBMR is geographically located within the Waianae Range geomorphic province with the Kaukonahua stream to the east, and the Town of Wahiawa to the west. The elevation ranges from 660 feet above MSL to approximately 3,000 feet above MSL. The soils are similar to much of the rest of the Hawaiian Islands, thin, acidic, and derived from volcanic ash and high in organic matter. Soil erodibility is moderate to high.

Much of the South Range area is south of Waikele stream, and is comprised of east-sloping upland sloping from an approximate elevation of 1,200 feet above MSL in the southwest to roughly 850 feet above MSL near Wheeler Army Airfield in the east. The upland area is divided by Waikele Gulch and several north-draining tributaries to Waikele stream. The soils there are underlain by Kunia silty clay; however, soils on the east side of the area include Kolekole silty clay loam and Mahana silty clay loam. Water runoff is low and presents a slight erosion hazard. It is important to note that the State of Hawai'i classifies South Range as being "important farmland" because it supports un-irrigated pineapple culture.

Wheeler Army Airfield is located between the SBMP and SBER facilities, at the southern portion of the Schofield Plateau. Wheeler Army Airfield is mainly flat with gentle slops and has an elevation range of 860 feet above MSL to 790 feet above MSL. The soils there are well drained and are at least 4 feet thick, developed on alluvium over weathered basalt. Water runoff is slow. The erodibility of soils is minimal, except for the area nearby Waikele stream, which has a high erosion hazard.

The SBER facility is bound between the Kauhonahua watershed and the Waikele watershed in the south. The northern boundary lies between the Kaukonahua watershed and Poamoho watershed. The elevation ranges from 2,681 feet above MSL to approximately 850 feet above MSL. The area is comprised of rugged terrain and steep stream valley walls. The East Range contains thin soils and is considered rough mountainous land. Soils are underlain by saprolite. The ridge tops are poorly drained, consisting of silty clays and high in organic matter retaining a high compaction potential and moderate erosion potential. Soils found downslope of these areas are generally composed of silty clay. On the gentler slopes of the facility, soils can be gravelly with a slight to moderate erosion potential.

The elevations of KTA and KLOA range from approximately 1,860 feet above MSL to at or near sea level. The soils primarily consist of silty clay, which is well drained and runs deep in the subsurface. Sloping areas are comprised of moderately fine to fine subsoil which raises the erodibility of the soils on steep slopes to high. The Paumalu-Badland Complex soils exhibit medium to rapid runoff and have a medium erosion potential. The Badland area contains rocky land with a high erosion potential due to existing erosion caused by wind and water. The KTA area has experienced a high soil loss due to training operations.

DMR is on O'ahu's Waialua Plain and extends to the Waianae Range. Elevation ranges from near sea level on the northern boundary to 200 feet near the southern boundary. Soils at DMR are developed on beach sand deposits, with various mixtures of finer and coarser sediments. Most of the area is underlain by Jaucas sand, which has been disturbed or filled to construct the airstrip, roads, and building sites. DMR also contains boggy seasonal wetlands, which are underlain by Lualualei clay, and marginal sloping uplands predominantly underlain by Kaena very stony clay or other stony or rocky soils. The Jaucas sand is highly susceptible to wind erosion. Kaena very stony clay exhibits moderate to severe water erosion (USAG-HI, 2004).

PTA's high elevation, coupled with the area's relatively young geologic age, low precipitation, and rapid runoff, results in mostly thin and poorly developed soils. Much of the land surface of

PTA is characterized by sparsely vegetated basaltic rock in the early stages of decomposition and soil formation. Pāhoehoe lava, ʻaʻā lava, and miscellaneous land types (e.g., puʻus) cover approximately 80 percent of the installation. Of the 132,819 acres at PTA, only about 10,000 acres are classified as soils formed on volcanic deposits, most of which lies within the Keamuku parcel (KMA). Twenty-four soil types were identified and broadly classified at PTA, with 14 soil types within the KMA. Deeper soils are found in the northern and western portion of the installation (i.e., KMA). Most of the central and southern portions of PTA are covered by lava flows, and small amounts of eolian sands.

4.18.6.2 Environmental Consequences

No Action Alternative

The Army activities contributing to soil erosion would not change from the conditions described in Section 4.18.6.1, under the No Action Alternative. Construction of cantonment and range projects would proceed as they are planned, and would temporarily create conditions promoting soil loss. Live-fire and maneuver training would continue to disturb soil and remove vegetation creating the potential for soil erosion. Impacts on both O'ahu and at PTA would continue to be significant but mitigable. Standard range maintenance BMPs implemented by USAG-HI include road grading, target repair, and berm recontouring. Mitigation measures, implementation of the ITAM annual work plan, and BMPs are followed to minimize soil loss and mitigate impacts to a less than significant level. Mounted and dismounted maneuver training of existing vehicles would continue. Maneuver activities would continue to be executed at designated maneuver training areas. This would damage or remove vegetation and disturb soils to an extent that could increase soil erosion rates and alter drainage patterns in the training areas, which could lead to gullying, and indirectly to downstream sedimentation, particularly when the vehicles travel off-road. Mitigation measures, implementation of the ITAM annual work plan, and BMPs are followed to minimize soil loss and mitigate impacts to a less than significant level.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Impacts from soil erosion are anticipated to be beneficial overall, with short-term minor impacts from increased demolition activities. Alternative 1 includes the reduction of no longer needed facilities that could result in short-term adverse impacts from demolition and temporary exposure of bare soils to rain and water and wind erosion; however, these impacts would be short term in duration. Exposed areas of soil after deconstruction would likely be reseeded with native species to reduce the impacts from fugitive dust. Consequently, minor soil erosion impacts from deconstruction activities at USAG-HI are anticipated.

The number of required live-fire user days per year at USAG-HI would drop below current levels by approximately 10 percent. Weapons firing can involve the disturbance of vegetation and soils, which can cause increases in soil erosion rates. Implementation of the INRMP and ITAM program work plans and associated management practices along with additional soil erosion mitigation measures would continue. Consequently, impacts to soil erosion from a reduction in live-fire training would be negligible to minor impact as fewer opportunities for soil erosion would occur.

The intensity and frequency of maneuver training at USAG-HI would also decrease below current levels. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at USAG-HI. Implementation of the INRMP and ITAM program work plans and associated management practices along with additional soil erosion mitigation measures would continue. Consequently, impacts to soil erosion from a reduction in live-fire training would be minor.

Alternative 2: Installation gain of up to 1,500 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There is anticipated to be significant but mitigable impacts to soil resources at USAG-HI on both O'ahu and at PTA resulting from the implementation of Alternative 2. Alternative 2 would involve the demolition of some facilities and construction of new facilities within the existing cantonment area resulting in short- and long-term minor impacts. At SBMR, short-term impacts would occur as infill construction in the cantonment area would take place among existing structures. Stormwater management practices would be implemented to mitigate potential adverse effects from sediment runoff. Long-term effects could occur from the compaction of soils, reducing the likelihood for vegetation to re-establish itself and increasing the effects from wind erosion or precipitation. Soils transported away from the construction area may accumulate in gullies or to other areas where post-precipitation event water may carry sediments to other waterbodies. Other direct long-term effects would include a change in soil function due to permanent modification of the area (construction of a building on top of previously undisturbed soil).

Any range construction and expansion projects would have similar impacts to soils as would cantonment construction. These projects would be subject to site-specific NEPA analysis. There are not any range projects currently known to be required to support Alternative 2. Heavy construction machinery or vehicles would disturb the soil surface through excavation, digging of wheels into the surface media, and physically moving soils from place to place. Short-term effects would occur from soil transport and loading into nearby waterbodies. Fugitive dust may also occur; however, impacts from dust would likely be localized and not have any lasting adverse effects to nearby waterbodies. Long-term minor direct effects would occur from the loss of vegetation, exposing the soils beneath; and may also include the compaction of some soils making it difficult to support future vegetative growth; and permanent modification of soil function. The installation would continue to use existing construction BMPs to mitigate any potential effects.

Implementation of Alternative 2 would increase the frequency of live-fire activities on ranges by 10 to 15 percent, potentially causing a greater amount of soil disturbance. Weapons firing typically involves the disturbance of soils, denuding the soil surface of vegetation, and increasing the erodibility of soils. USAG-HI DPW staff monitor impacts from live-fire activities and would continue to institute the required mitigations and BMPs (such as berm revegetation and regrading) to minimize sediment migration off the firing ranges.

For Combat Support units, the use of ordnance or explosives could cause wildfires resulting in the removal of vegetation that normally protects soil from erosion. The presence of vegetation slows surface water runoff by intercepting raindrops before they reach the soil surface, and works to anchor the soil with roots. Without surface vegetation, the top layer of soils may be transported away due to natural processes, and the soil remaining may become compacted leaving little opportunity for vegetation to re-establish itself. Vegetation removal resulting from wildland fires could result in increased soil erosion by water and wind, indirectly causing large-scale removal and redeposition of soils, gullying, or unstable slopes in areas of steep slopes and rapid runoff. The impact would be directly proportional to the size of the fire. Without surface vegetation, the top layer of soils may be transported away due to natural processes, and the soil remaining may become compacted leaving little opportunity for vegetation (especially native vegetation) to re-establish itself. Vegetation removal resulting from wildland fires could result in increased soil erosion by water and wind, indirectly causing large-scale removal and redeposition of soils, gullying, or unstable slopes in areas of steep slopes and rapid runoff. The impact would be directly proportional to the size of the fire. Under natural conditions, wildland fires occur infrequently in Hawai`i. Thus, native plant species are not well

adapted to fire. Fire and loss of soil could reduce native plant species and encourage fast-growing non-native species that recover quickly after fires. Some of these species may be more susceptible, or even dependent, on fire so that the occurrence of wildland fires may help to increase the chance of future wildland fires. The installation's Wildfire Management Plan would be utilized to minimize the effects of live-fire activities to vegetation while maintaining effects to a manageable area.

Units operating at impact areas in the summer can directly create craters and remove patches of vegetation, which normally protect soil from erosion by slowing runoff, intercepting raindrops before they reach the soil surface, and anchoring the soil. Compaction in the craters caused by larger ordnance explosions can alter the permeability and water-holding capacity of the soils affecting the ability of vegetation to recover in those areas. These direct impacts indirectly create large areas of bare ground and exposed soils that are susceptible to wind and water erosion, which can indirectly cause large-scale removal and redeposition of soils, gullying, or unstable slopes in areas of steep slopes and rapid runoff. Although weapons training events would be periodic, long-term impacts are anticipated because soil disturbance typically requires time and effort to amend.

The addition of 1,500 Soldiers may increase the frequency of maneuvers by 10 to 15 percent. The increase in maneuver frequency is anticipated to correlate with resulting damage to vegetation and disturb soils to an extent that would increase soil erosion rates and alter drainage patterns in the training areas. This could lead to gullying, and indirectly to downstream sedimentation, particularly when the vehicles travel off-road. The increased mounted and dismounted traffic on ranges would lead to additional damage to vegetation and soil disturbance. Drum Road would be used by to transport Soldiers, vehicles, and equipment to KTA. The soils in maneuver areas at KTA are generally well drained; however, they have experienced a high rate of loss due to recent training operations. The addition of vehicle maneuvers there may continue to increase the rate of erosion and decrease the sustainability of soils in that training area. Management of soil sustainability at KTA would become more time intensive as more monitoring and mitigation may be required.

DMR would continue to support some maneuver training. Large-scale exercises would be supported at PTA. Less than significant effects on land condition may occur because the land damage would be limited to the existing roads and trails instead of distributed over the entire DMR. As with KTA, the effects would be minimized due to USAG-HI institutional programs to include the ITAM program.

Overall, impacts from Alternative 2 would be projected to have significant but mitigable impacts to soils within USAG-HI with the implementation of mitigation measures described below.

Regulatory and Administrative Measure 1. Installation DPW staff monitor impacts from live-fire activities and would continue to institute the required mitigations and BMPs (such as berm revegetation and regrading) to minimize effects off the firing ranges.

Regulatory and Administrative Measure 2. During range operations and live-fire activities, range officers and firing units are required to carry equipment to put out a small fire and are briefed on procedures for reporting fires to range control for rapid fire prevention response.

Regulatory and Administrative Measure 3. The Army continually funds and implements USAG-HI-wide land management practices and procedures described in the ITAM annual work plan to reduce erosion and other soil and geologic impacts. Currently, these measures include implementing a Training Requirements Integration program, implementing an ITAM program, implementing a Sustainable Range Awareness program, developing and enforcing range regulations, and continuing to implement land rehabilitation projects, as needed, within the

LRAM program. Examples of erosion and sediment control measures identified in the ITAM annual work plan include stormwater runoff control structures (silt fences, hay bales, etc.) as part of standard BMPs, which would divert water from the construction sites. Standard range maintenance BMPs implemented by USAG-HI include road grading, target repair, and berm recontouring. Examples of current LRAM activities at USAG-HI include revegetation projects involving site preparation, liming, fertilization, seeding or hydroseeding, tree planting, irrigation, and mulching; combat trail maintenance program; and development mapping and GIS tools for identifying and tracking progress of mitigation measures.

These mitigation measures would reduce soil erosion impacts from construction to less than significant.

4.18.7 Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species)

4.18.7.1 Affected Environment

This section describes the plant and animal species (biological resources) and habitats that occur in the terrestrial environments within and surrounding USAG-HI. Biological resources include those that are limited in number or habitat or restricted in movement (e.g., plants and small mammals). These resources also include those that are more mobile and can range onto and off the property from surrounding habitat areas (e.g., birds and terrestrial mammals).

The Hawaiian Islands are located over 2,400 miles from the nearest continental shore, isolating these islands from other land masses. Hawai'i is home to a large number of species only found in this geographic area (referred to as endemic species). Endemic species can be classified as found only on the Hawaiian islands (as an archipelago) or to a single Hawaiian island. For example, there are 71 known taxa of endemic Hawaiian birds, 23 are known to be extinct and 30 of the remaining 48 species (and subspecies) are federally-protected as listed species by USFWS. There are 1,094 taxa of native flowering plants found in Hawai'i, 91 percent of which occur only in Hawai'i. Almost half of Hawai'i's native vascular plant taxa (flowering plants, ferns, and fern allies) are believed to be endemic and found nowhere else in the world.

Terrestrial biological resources are divided into three categories: vegetation communities, wildlife, and special-status species. Vegetation consists of terrestrial plants and their habitat types (i.e., shrub land). Wildlife includes invertebrates, amphibians, reptiles, terrestrial mammals, birds, fish, and marine wildlife. For the purposes of this document, protected species include those listed or candidate species under federal and State of Hawai'i laws, locally regulated species, and migratory birds. All Army operations consider any published Biological Opinions, species and habitat listings or recommendations regarding any listed species to protect these species from impact appropriately. The ROI for biological resources consists of the lands that support terrestrial biological resources (i.e., individual species and habitats) that may be directly or indirectly affected by the Proposed Actions. Vegetation, wildlife, critical habitats, and listed species that have been recorded in or that have the potential to be found within this ROI, based on the presence of suitable habitat, are discussed in this section. Biological resources have the potential to be impacted by construction, operations, and training related activities.

The extensive boundaries and variances in elevation on SBMR and its designated training sites provide a wide diversity in wildlife habitats, highly urbanized areas, streams, native forest, and grasslands (U.S. Army, 1995). The ROI for biological resources includes those areas where the extent of maneuver, helicopter, and live fire associated with stationing scenarios would potential pose potential impacts to vegetation and wildlife from human activities such as construction and

training. Therefore, the ROI for these scenarios could include SBMR, South Range, DMR, SBER, KLOA, KTA, Wheeler Army Airfield, and PTA.

This section discusses the affected environment and impacts on biological resources to include vegetation, noxious weeds, threatened and endangered species, habitats, and general wildlife.

***Schofield Barracks*.** Schofield is home to 53 rare plant species, 28 special status wildlife species, 2 rare vegetation communities, and large expanses of Biologically Significant Areas. Vegetative communities descriptions found in the ROI include: a mixed fern and shrub community found in the higher elevations of the Koolau Mountains where rainfall exceeds 150 inches. Falling between 3,200 and 4,000 feet above MSL is the Montane wet ohia forest, dominated largely by the ohia tree. Ohia Shrubland is found at elevations between 2,500 and 3,000 feet above MSL. In areas where conditions are warmer and sheltered from the wind, there are three types of lowland wet communities; these are Ohia forest, Uluhe Shrubland, and the Loulu hiwa forest. Lowland moist communities include the Kawelu grassland, Ohia lowland moist Shrubland, O'ahu diverse forest, and Koa/Ohia forest. Adjacent to these areas are swaths of non-native grasses and shrublands found in fire-disturbed areas.

***Kahuku Training Area and Kawailoa Training Area*.** KTA, which in total encompasses 8,528 acres, is located at the end of the Koolau Mountains, on the northern tip of O'ahu. Private, agricultural, and additional Army training lands border it. Botanical surveys to identify rare plants, communities, and potential threats to these resources have been conducted intermittently since 1977. KLOA is north of SBER and south of KTA in the Koolau Mountains. It consists of 23,348 acres. KLOA was surveyed in 1976 and 1977 by the Environmental Impact Study Corporation and later by Hawai'i National Heritage Program (1989 to 1993). O'ahu Army Natural Resource Program continues to conduct biological inventory surveys. Kawailoa is an area of incredible biological richness, with areas of significance for protecting and managing these resources. Native natural community types within the KTA/KLOA ROI fall into six general categories: montane wet, lowland wet, lowland forest, lowland moist, lowland dry, and intermittent aquatic natural communities**.** The areas in and around KTA and KLOA support 20 species of endangered plants, 6 Species of Concern, and 10 candidate species. KTA and KLOA also support two ecologically sensitive areas and nearly 1,000 acres of biologically sensitive areas. Figure 4.18-3 demonstrates the location of plant critical habitat on O'ahu.

Much of the lower-lying vegetation of the KTA/KLOA ROI is composed of invasive plants. Several of these widespread species create dense single-species stands (Christmas berry, ironwood, strawberry guava) that shade out understory species. Two of the plants that are potentially most devastating to the native communities of KTA are *Chromolaena odoratum* and *Pennisetum setaceum*. Disturbed moist forests are most at risk from these invasions, and efforts are needed to protect the native communities within these boundaries. Most of the wildlife species inhabiting the landscape that makes up the KTA/KLOA ROI are non-native. The Army has been conducting regular zoological field surveys on KTA and KLOA that have focused on special status invertebrates, mammals, and birds. There have been no specific reptile or amphibian surveys on KTA due to the absence of native terrestrial reptiles and amphibians on the Hawaiian Islands.

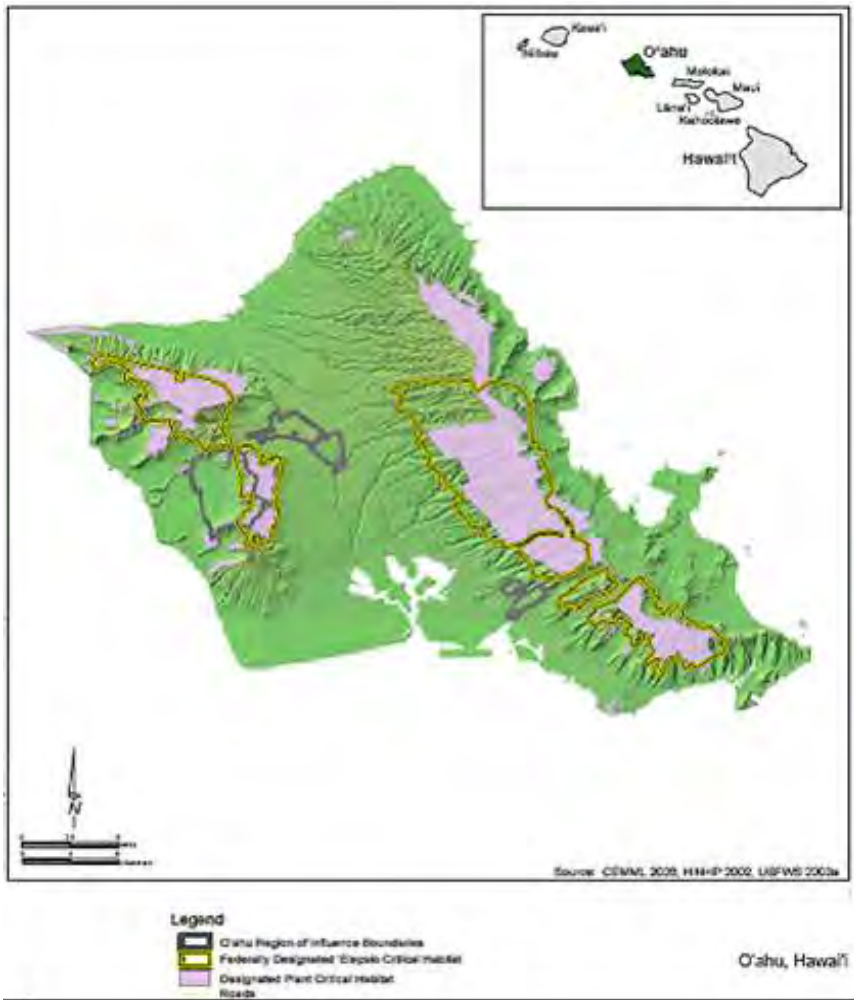

Figure 4.18-3. Plant Critical Habitat on O'ahu

***Dillingham Military Reservation*.** The area surrounding DMR is sparsely populated, and neighboring land is owned either privately or by the State of Hawai`i. Botanical surveys to identify rare plants, communities, and potential threats to these resources have been conducted intermittently since 1977. Hawai'i National Heritage Program surveyed the area in 1995, but the visit was brief due to the small size and rugged terrain of the training area. During this site visit, Hawai'i National Heritage Program staff documented the only known example in Hawai`i of extremely dry closed-canopy forest.

In 2003, the Army initiated a formal consultation with the USFWS by issuing a Biological Assessment for military activities on the Island of O'ahu. The USFWS responded with no Jeopardy Biological Opinion (October 2003) for current force activities and transformation of the 2/25th Brigade to a SBCT on the islands of O'ahu and Hawai`i (USFWS, 2003a and 2003b, respectively). The Biological Opinions was issued under the condition that the listed species that have less than three stable populations and/or more than 50 percent of known individuals occur within the action area be stabilized. The consultation used an action area that encompasses all land potentially affected by military training and thus includes land outside the installation boundaries. Overall, there are 50 full-time staff executing biological opinion requirements year-round.

Pohakuloa Training Area. There are at least 90 species of arthropods and six other invertebrates found on PTA. A 1996 to 1998 survey found 485 taxa of arthropods on PTA. Most taxa were non-native species. Other more recent invertebrate studies determined the presence and location of the Argentine ant (*Linepithema humile*) and other ant species (USAG-HI, 2010).

The ‘ope‘ape‘a, or Hawaiian hoary bat (*Lasiurus cinereus semotus*), is the only native land mammal at PTA. All other mammals are non-native and individual perceptions can affect their designation as game or as an invasive/nuisance species. Common game mammals include feral goat (*Capra hircus*), sheep (*Ovis aries*), and pig (*Sus scrofa*), which, along with rat species (*Rattus rattus*), mongoose (*Herpestes auropunctatuts*), mouse (*Mus domesticus*), domestic cattle (*Bos Taurus*), domestic horse (*Equus caballus*), feral dogs (*Canis familiaris*), and feral cats (*Felis catus*) are considered nuisance species and harmful to the persistence of many native species (USAG-HI, 2010).

Twelve endemic (native) bird species are present at PTA, along with 25 introduced (non-native) or visitor bird species. Many of the introduced (non-native) species are considered game birds. Seventeen of the bird species are protected by the MBTA, almost half of which are introduced (non-native) or visitor species that have established populations.

Approximately 38 percent of the plants found on PTA are indigenous (endemic, native) and the remaining are non-native species (USAG-HI, 2010). There are numerous vegetation communities on PTA. Introduced plant species make up a significant portion of many of these habitats, and introduced plants are components in all habitats on PTA. PTA’s habitats include bare ground, grassland, lava, scrub, and sparse trees. Barren lava covers 25 percent of the installation. Lichens, such as lava lichen (*Stereocaulon vulcani*), and ferns, such as cliffbrake (*Pelaea ternifolia*), are the first colonizers of these flows, although fountain grass is beginning to invade these barren areas.

As previously mentioned, PTA does not contain waterbodies to support aquatic fauna. Therefore, there are no native amphibians, reptiles, fish, or marine wildlife on PTA (USAG-HI, 2010). Surveys and studies have been conducted for listed vegetation, habitat, and wildlife species at PTA since the 1970s. Surveys for special species of wildlife on PTA first occurred in 1976. Since 1980, annual surveys for palila (*Loxioides bailleui*) in the Mauna Kea region are administered by the Hawai‘i State Department of Land and Natural Resources, Division of Forestry and Wildlife, with assistance from USFWS. In 1990, bird and mammal surveys were conducted at PTA. Plant and wildlife surveys have been conducted regularly between 1996 and 2010. Annual avian surveys, with a focus on listed species, have been conducted on PTA since 1997.

Due in part to the presence of listed wildlife and critical habitat on PTA, the U.S. Army initiated formal ESA, Section 7 consultation with the USFWS for Routine Military Training and Transformation of the 2/25th SBCT. In 2003, a Biological Opinion was provided, which required specific conservation measures and nondiscretionary terms and conditions to be implemented by the U.S. Army. These measures were intended to ensure the continued existence of the federally-listed species found at PTA. One of the main requirements is to construct large-scale fence units, and maintain these fence units ungulate-free. Fence units are completed on Western PTA, and currently encompass approximately 28,000 acres of conservation management areas. A large-scale fence unit on Eastern PTA (Training Area 21) is currently under construction, and would encompass approximately 12,000 acres.

In 2008, the U.S. Army reinitiated the Section 7 consultation with the USFWS because nenes were utilizing a live-fire range and attempted to nest in the KMA (USFWS, 2008). The 2008 Biological Opinion mainly addresses impacts of new construction, training, and conservation actions that may affect the nene (USFWS, 2008).

There are 15 federally-listed plant species at PTA. Three of the endangered plant species are located in the KMA. The Army considers federal candidate species and state-listed species as species at risk. No critical habitat is present for listed plant species present at PTA. Endangered plants such as kio'ele (*Kadua coriacea*) and Mauna Kea pamakani (*Tetramolopium arenarium var. arenarium*), have been identified in the western portion of PTA. The Kīpuka Kālawamauna Endangered Plants Habitat 7,853 acres is located in the northwest corner of PTA between the impact area and the historic boundary in portions of Training Areas.

Table 4.18-4 presents the threatened and endangered species found on USAG-HI.

Table 4.18-4. Threatened and Endangered Species found on U.S. Army Garrison-Hawai'i

Scientific Name	Common Name	Status	Plant or Animal	Installations	Last Obs	Stabilization?	MMR CH	SBMR	SBER	DMR	MMR	KTA	KLOA
Schiedea obovata		E	Plant	MMR	2000	Y	Y				Y		
Bonamia menziesii		E	Plant	MMR	2000	N	Y				Y		
Chamaesyce celastroides var. kaenana	`Akoko	E	Plant	MMR	2000	Y	Y				Y		
Chamaesyce herbstii	`Akoko	E	Plant	MMR	2000	Y	Y				Y		
Colubrina oppositifolia			Plant CH	MMR		N	Y						
Cyanea longiflora	Haha	E	Plant	MMR	2000	Y	Y				Y		
Cyanea superba spp. suberba	Haha	E	Plant	MMR	2000	Y	Y				Y		
Dubautia herbstobatae	Na`ena`e	E	Plant	MMR	2000	Y	Y				Y		
Euphorbia haeleeleana		E	Plant	MMR	2000	N	Y				Y		
Gouania vitifolia		E	Plant	MMR	2003	Y	Y				Y		
Hedyotis degeneri degeneri		E	Plant	MMR	2000	Y	Y				Y		
Hedyotis parvula		E	Plant	MMR	2000	Y	Y				Y		

Scientific Name	Common Name	Status	Plant or Animal	Installations	Last Obs	Stabilization?	MMR CH	SBMR	SBER	DMR	MMR	KTA	KLOA
Isodendrion laurifolium			Plant CH	MMR			Y						
Isodendrion longifolium			Plant CH	MMR			Y						
Isodendrion pyrifolium			Plant CH	MMR			Y						
Lipochaeta tenuifolia	Nehe	E	Plant	MMR	2000	Y	Y				Y		
Mariscus pennatiformis			Plant CH	MMR			Y						
Melicope pallida			Plant CH	MMR			Y						
Nototrichium humile	Kulu`l	E	Plant	MMR	2005	Y	Y				Y		
Sanicula mariversa		E	Plant	MMR	2000	Y	Y				Y		
Solanum sandwicense			Plant CH	MMR			Y						
Spermolepis hawaiiensis		E	Plant	MMR	2000	N	Y				Y		
Hibiscus brackenridgei spp. mokuleianus	Ma`o hau hele	E	Plant	MMR, DMR	2005	Y	Y			Y	Y		
Cyrtandra dentata	Ha`iwale	E	Plant	MMR, KLOA	2000	Y	Y				Y		Y

Scientific Name	Common Name	Status	Plant or Animal	Installations	Last Obs	Stabilization?	MMR CH	SBMR	SBER	DMR	MMR	KTA	KLOA
Cyanea grimesiana spp. obatae	Haha	E	Plant	MMR, SBMR	2005	Y	Y	Y			Y		
Delissea subcordata	Haha	E	Plant	MMR, SBMR	2000	Y	Y	Y			Y		
Diellia falcata		E	Plant	MMR, SBMR	2000	N	Y	Y			Y		
Flueggea neowawraea	Mehamehame	E	Plant	MMR, SBMR	2000	Y	Y	Y			Y		
Hesperomannia arbuscula		E	Plant	MMR, SBMR	2000	Y	Y	Y			Y		
Neraudia angulata	Ma`aloa	E	Plant	MMR, SBMR	2000	Y	Y	Y			Y		
Phyllostegia kaalaensis		E	Plant	MMR, SBMR	2000	Y	Y	Y			Y		
Plantago princeps princeps	Ale	E	Plant	MMR, SBMR	2000	Y	Y	Y			Y		
Schiedea hookeri		E	Plant	MMR, SBMR	2000	N	Y	Y			Y		
Schiedea kaalae		E	Plant	MMR, SBMR	2000	Y	Y	Y			Y		
Schiedea nuttallii var. nuttallii		E	Plant	MMR, SBMR	2000	Y	Y	Y			Y		

Scientific Name	Common Name	Status	Plant or Animal	Installations	Last Obs	Stabilization?	MMR CH	SBMR	SBER	DMR	MMR	KTA	KLOA
Chasiempis sandwichensis ibidis	O'ahu `Elepaio	E	Bird	MMR, SBMR,	2000	Y	Y	Y			Y		
Cyperus trachysanthos		E	Plant	DMR	2000	Y				Y			
Fulica alai	Hawaiian Coot	E	Bird	DMR	2009	N				Y			
Gallinula chloropus sandvicensis	Common Moorhen	E	Bird	DMR	2009	N				Y			
Himantopus mexicanus knudseni	Black necked stilt	E	Bird	DMR	2009	N				Y			
Schiedea kealiae		E	Plant	DMR	2000	N				Y			
Achatinella apexfulva	*Pupu Kuahiwi*	E	Snail	KLOA	1998	Y							Y
Achatinella bulimoides	*Pupu Kuahiwi*	E	Snail	KLOA	1985	Y							Y
Achatinella lila	*Pupu Kuahiwi*	E	Snail	KLOA	2002	Y							Y
Achatinella livida	*Pupu Kuahiwi*	E	Snail	KLOA	2002	Y							Y
Achatinella pulcherima	*Pupu Kuahiwi*	E	Snail	KLOA	1993	Y							Y
Cyanea crispa	Haha	E	Plant	KLOA	2000	Y							Y
Cyanea humboldtiana	Haha	E	Plant	KLOA	2000	N							Y

Scientific Name	Common Name	Status	Plant or Animal	Installations	Last Obs	Stabilization?	MMR CH	SBMR	SBER	DMR	MMR	KTA	KLOA
Megalagrion leptodemas	Crimson Hawaiian Damslelfy	P	Insect	KLOA		N							Y
Megalgrion nigrohamatum spp. nigrolineatum	Blackline Hawaiian Damselfly	P	Insect	KLOA		N							Y
Megalagrion oceanicum	Oceanic Hawaiian Damselfly	P	Insect	KLOA	2008	Y							Y
Melicope lydgatei	Alani	E	Plant	KLOA	2000	Y							Y
Myrsine juddii	Kolea	E	Plant	KLOA	2001	Y							Y
Phyllostegia parviflora		E	Plant	KLOA	2000	N							Y
Psychotria hexandra ssp oahuensis	Kopiko	P	Plant	KLOA		Y							Y
Achatinella curta	*Pupu Kuahiwi*	E	Snail	KLOA, KTA	1989	Y						Y	Y
Achatinella byronii/ decipiens	*Pupu Kuahiwi*	E	Snail	KLOA, SBER	2000	Y			Y				Y
Chamaesyce rockii	`Akoko	E	Plant	KLOA, SBER	2005	Y			Y				Y
Cyanea st.-johnii	Haha	E	Plant	KLOA, SBER	2000	Y			Y				Y

Scientific Name	Common Name	Status	Plant or Animal	Installations	Last Obs	Stabilization?	MMR CH	SBMR	SBER	DMR	MMR	KTA	KLOA
Cyrtandra viridiflora	Ha`iwale	E	Plant	KLOA, SBER	2000	Y			Y				Y
Phlegmariarus nutans		E	Plant	KLOA, SBER	2000	Y			Y				Y
Pteris lidgatei		E	Plant	KLOA, SBER	2000	Y			Y				Y
Sanicula purpurea		E	Plant	KLOA, SBER	2000	Y			Y				Y
Viola oahuensis		E	Plant	KLOA, SBER	2000	Y			Y				Y
Achatinella sowerbyana	*Pupu Kuahiwi*	E	Snail	KLOA, SBER, KTA	2002	Y			Y			Y	Y
Tetraplasandra gymnocarpa	`Ohe`ohe	E	Plant	KLOA,KTA, SBER	2000	N			Y			Y	Y
Eugenia koolauensis	Nioi	E	Plant	KTA	2005	Y						Y	
Abutilon sandwicense		E	Plant	MMR	2003	N					Y		
Bidens amplectens	Kookolau	P	Plant	MMR		N					Y		
Cyanea dentata	Haha	E	Plant	MMR	2000	N					Y		
Korthalsella degeneri	Hulumoa	P	Plant	MMR		Y					Y		

Scientific Name	Common Name	Status	Plant or Animal	Installations	Last Obs	Stabilization?	MMR CH	SBMR	SBER	DMR	MMR	KTA	KLOA
Melicope makahae	Alani	P	Plant	MMR		Y					Y		
Peucedanum sanwicense	Makou	E	Plant	MMR	2005	N					Y		
Platydesma cornuta var decurrens		P	Plant	MMR		N					Y		
Pleomele forbesii	Hala Pepe	P	Plant	MMR		N					Y		
Silene lanceolata		E	Plant	MMR	2000	N					Y		
Tetramolopium filiforme		E	Plant	MMR	2000	Y					Y		
Lobelia oahuensis	Haha	E	Plant	MMR, KLOA, SBER, SBMR	2000	Y		Y	Y		Y		Y
Achatinella mustelina	*Pupu Kuahiwi*	E	Snail	MMR, SBMR	2000	Y		Y			Y		
Alectryon macrococcus var. macrococcus	`Ala `alahua, mahoe	E	Plant	MMR, SBMR	2000	Y		Y			Y		
Cenchrus agrimonioides var. agrimonioides	Kamanomano	E	Plant	MMR, SBMR	2005	Y		Y			Y		

Scientific Name	Common Name	Status	Plant or Animal	Installations	Last Obs	Stabilization?	MMR CH	SBMR	SBER	DMR	MMR	KTA	KLOA
Ctenitis squamigera	Pauoa	E	Plant	MMR, SBMR	2000	N		Y			Y		
Isodendrion longifolium	Aupaka	E	Plant	MMR, SBMR	2000	N		Y	Y				
Lepidium arbuscula	`Anaunau	E	Plant	MMR, SBMR	2000	N		Y			Y		
Lobelia niihauensis	Haha	E	Plant	MMR, SBMR	2000	N		Y			Y		
Pritchardia kaalae	Loulu	E	Plant	MMR, SBMR	2000	Y		Y			Y		
Viola chamissoniana spp. chamissoniana	Pamakani	E	Plant	MMR, SBMR	2000	Y		Y			Y		
Pteralyxia macrocarpa	Kaulu	P	Plant	MMR, SBMR, KLOA, KTA		N		Y			Y	Y	Y
Cyrtandra subumbellata	Ha`iwale	E	Plant	SBER	2000	Y			Y				
Lobelia gaudichaudii spp. koolauensis	Haha	E	Plant	SBER	2001	Y			Y				

Scientific Name	Common Name	Status	Plant or Animal	Installations	Last Obs	Stabilization?	MMR CH	SBMR	SBER	DMR	MMR	KTA	KLOA
Melicope christophersenii	Alani	P	Plant	SBER		Y			Y				
Melicope hiiakae	Alani	P	Plant	SBER, KLOA		Y			Y				Y
Platydesma cornuta var cornuta		P	Plant	SBER, KLOA		Y			Y				Y
Zanthoxylum oahuense	Ae	P	Plant	SBER, KLOA		N			Y				Y
Cyanea koolauensis	Haha	E	Plant	SBER, KTA, KLOA	2000	Y			Y			Y	Y
Abutilon sandwicense		E	Plant	SBMR	2005	Y		Y					
Alsinidendron trinerve		E	Plant	SBMR	2000	Y		Y					
Drosophila montgomeryi	Pomace Fly	E	Insect	SBMR	2009	Y		Y					
Labordia cyrtandrae	Kamakahala	E	Plant	SBMR	2000	Y		Y					
Phyllostegia mollis		E	Plant	SBMR	2000	Y							
Stenogyne kanehoena		E	Plant	SBMR	2005	Y		Y					
Urera kaalae	Opuhe	E	Plant	SBMR	2000	Y		Y					

Scientific Name	Common Name	Status	Plant or Animal	Installations	Last Obs	Stabilization?	MMR CH	SBMR	SBER	DMR	MMR	KTA	KLOA
Cyanea calycina	Haha	P	Plant	SBMR, KLOA		Y		Y			Y		
Cyanea lanceolata	Haha	P	Plant	SBMR, KLOA		N		Y					Y
Cyanea acuminata	Haha	E	Plant	SBMR, KLOA, SBER	2000	Y		Y	Y				Y
Hesperomannia arborescens		E	Plant	SBMR, KLOA, SBER	2000	Y		Y	Y				Y
Phyllostegia hirsuta		E	Plant	SBMR, KLOA, SBER	2000	Y		Y	Y				Y
Gardenia mannii	Nanu, na`u	E	Plant	SBMR, KTA, KLOA, SBER	1994	Y		Y	Y			Y	Y
Drosophila substenoptera	Pomace Fly	E	Insect	SMBR	2009	Y		Y					
Megalagrion xanthomelas	Orangeblack Damselfly	C	Insect	TAMC	2009								

DMR = Dillingham Military Reservation; KLOA = Kawailoa Training Area; KTA = Kahuku Training Area; MMR = Makua Military Reservation; SBER = Schofield Barracks East Range; SBMR = Schofield Barracks Military Reservation; TAMC = Tripler Army Medical Center

4.18.7.2 Environmental Consequences

No Action Alternative

No additional impacts would occur under the No Action Alternative and impacts would remain significant but mitigable. USAG-HI would continue to adhere to its existing resource management plans and INRMP (USAG-HI, 2010) to further minimize and monitor any potential effects. Units are briefed prior to each training event regarding sensitive areas on post, such as protected species habitat, and what is and is not allowed within certain areas. Construction of cantonment and range projects would proceed as they are planned, and would occur in previously disturbed areas. Live-fire and maneuver training would continue, disturbing wildlife by noise and human presence. Training could increase the risk of wildfire, and mitigation measures are in place to minimize that risk. Continued use of Army lands would impact sensitive species, but not have significant, adverse impacts.

Vegetation communities within the proposed range areas on SBMR, KTA, PTA, and KLOA would continue to be disturbed by live-fire training. Army use of those ranges would produce a less than significant impact to threatened and endangered species because live-fire training would occur over a larger area and at more locations. Continued use of Army land for training would increase live-fire training and the potential for wildfires, though mitigations are in place to ensure rapid response and minimization of wildfire damage. Several fire mitigation measures are being implemented throughout the garrison on existing ranges and would continue.

Training with existing vehicles would continue at current levels. Maneuver training would occur on established roads or trails, as well as areas designated for maneuver training throughout the installation. Wildlife would continue to be disturbed by noise and human presence during training, but the level of disturbance would not change from existing levels and remain a less than significant impact. Maneuver training could potentially increase the frequency of wildfires. Several fire mitigation measures are being implemented throughout the garrison on existing maneuver ranges and would continue. Impacts from continued training would remain mitigable to less than significant impact.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Beneficial impacts to biological resources as a result of the implementation of Alternative 1 are anticipated. Training would decrease by up to 30 percent as a result of implementation of this scenario. Access to range areas to conduct management and resource monitoring would increase. Proactive conservation management practices and species monitoring would be more easily accomplished with reduced mission throughput. The land within the main cantonment area where deconstruction would occur does not support any critical habitat or threatened or endangered species, or Species of Concern. This area is highly disturbed and used by humans daily. Activities associated with demolition actions (increase in vehicles and human presence) creates noise and disturbs wildlife; however, these activities have not shown to be detrimental to foraging behavior or reproductive success, but this observance may vary by location, species, and type of human activity. The impacts to wildlife from deconstruction on the garrison are anticipated to be negligible.

The number of required live-fire user days per year at USAG-HI would drop below current levels. A reduction in live-fire training related wildfires is anticipated as well as reduced impacts to fish and wildlife and vegetation. Reducing the number of Soldiers stationed at USAG-HI would open up opportunities for more management, recreation, and subsistence activities.

The intensity and frequency of maneuver training at USAG-HI would drop below current levels resulting in less wildlife and vegetation disturbance. Training would be conducted in the footprint

of existing ranges and trails at USAG-HI. Reduced impacts to fish, wildlife and vegetation would be similar to that discussed for live-fire training.

Alternative 2: Installation gain of up to 1,500 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Significant but mitigable impacts would be anticipated on both the Island of O'ahu and the Big Island of Hawai'i as a result of the implementation of Alternative 2. The increase in the number of Soldiers would increase training activity by a projected 10 to 15 percent above the current level.[3] While this moderate force augmentation would increase traffic in the training lands and ranges, it would not cause significant degradation or destruction of rare or sensitive species habitats.

Cantonment Construction. The land within the main cantonment area where construction and deconstruction would occur does not support any critical habitat, threatened or endangered species, or Species of Concern. Construction can introduce invasive species and other weeds through the use of sand and gravel that contains non-native plant seeds. Impacts from facilities construction in existing disturbed footprints is anticipated to be less than significant.

Mitigation measures, planning considerations, and BMPs contained in the INRMP, Integrated Wildland Fire Management Plan, Biological Opinions, O'ahu Implementation Plan, and other guidance documents would minimize impacts to biological resources from invasive species to a significant but mitigable level.

The O'ahu Implementation Plan identifies additional management actions, beyond those already used by the Army, needed to stabilize these target taxa. Live-fire training from this scenario would fall within the levels of training that the Army has consulted with the USFWS service on as part of the last Biological Opinion. If at any time there is a change in the training areas or action areas, a change in the potential impacts to the species in the action area, a change in the species status, or the discovery of additional taxa, the Army is required to reinitiate consultation with the USFWS pursuant to Section 7 of the ESA. Examples of mitigation measures that would be implemented under the current proposed training scenarios by the Army at potential impact sites on O'ahu include:

- Enclosure fencing of sensitive plant species to eliminate impacts from human disturbance and ungulates;
- Development and implementation of a fire fuel reduction plan;
- Development and implementation of an alien rat control plan to protect sensitive species;
- Expand monitoring programs in potential areas of impact for sensitive species;
- Establish signage to identify areas that are off limits due to the presence of federally-listed species; and
- Provide education for each set of new Soldiers regarding the importance of avoiding listed species and disturbance to their habitats.

In general, invasive plant species pose a threat to Native Hawaiian ecosystems. Movement of equipment into Hawai'i from continental U.S. or foreign ports, as well as from other islands or subinstallations within Hawai'i, would increase the likelihood of non-native plant and animal introductions. In addition, initial transport of vehicles associated with new stationing would also elevate this threat, even though shipped vehicles go through the USDA and customs inspections as part of standard procedure.

[3] At PTA, it is not known if the increased training would exceed historically authorized levels. If this were the case, additional NEPA analysis would be required.

The impact of stationing actions on the spread of invasive species would be lessened by instituting the Army's ongoing environmental programs. Measures identified in the O'ahu Training Areas INRMP (USARHAW and 25th Infantry Division[L] 2010), the Biological Opinion for the Island of O'ahu (USFWS, 2003a), the *Transformation EIS* (USAG-HI, 2004), and the Implementation Plan for O'ahu Training Areas (USAG-HI, 2008) for protection of biological resources and mitigations proposed as part of the ROD for the 2/25th SBCT Stationing EIS (2008) would continue as a result of the proposed SBCT project actions.

USAG-HI would follow DA guidance developed in consultation with the Invasive Species Council and compliance with E.O. 13112, which determines federal agency duties with regard to preventing and compensating for invasive species impacts. The implementation of an Environmental Management System would further improve the identification and reduction of environmental risks inherent in mission activities. Mitigation for Impacts from noxious weeds related to Construction and Training, as required in the terms and conditions of the Biological Opinion (USFWS, 2003a), include:

- Educating Soldiers and others potentially using the facilities and roads in the importance of cleaning vehicles, equipment, and field gear;
- Educating contractors and their employees about the need to wear weed-free clothes and maintaining weed-free vehicles when coming onto the construction site and avoiding introducing non-native species to the project site;
- Preparing a one-page insert to construction contract bids informing potential bidders of the requirement; and
- Inspecting and washing all military vehicles at wash rack facilities prior to leaving SBMR, KTA/KLOA, or PTA to minimize the spread of weeds, such as fountain grass, and animal (invertebrate) relocations.

***Live-Fire Training*.** The added small arms fire and weapons qualifications would have significant but mitigable impacts to biological resources as a result of all alternatives. This action would not involve introducing new types of weapons systems to Hawai'i nor would it involve an increase in live-fire training over the capacity thresholds that the Army has discussed with the USFWS as part of the 2003 Biological Opinion. No new Section 7 consultation would be required. The type and intensity of live-fire activities is not anticipated to change; however, the frequency of live-fire training on select live-fire ranges would increase by approximately 10 to 15 percent. It is anticipated that more than 96 percent of the munitions fired on these ranges would be small arms and machine gun munitions. Despite the limited nature of changes in live-fire training activities, the potential increase in wildfires resultant with the proportional increase in live-fire activities of all stationing scenarios would be significant though mitigable through the measures discussed below. An increase in fires could result in direct mortality of sensitive species and would also result in an increase in the spread of noxious weeds, loss of vegetative cover, and potential loss of soils from exposure to wind and water erosion.

Regulatory and Administrative Measure 1. In addition to the general mitigation measures already being implemented (Integrated Wildland Fire Management Plan, Soldier Education, Fuel Reduction) and discussed at the beginning of this section, several fire mitigation measures are being implemented throughout the garrison on existing ranges and would be in place as a result of all alternatives. These mitigations include:

- **SBMR:** Two fire access roads at SBMP, one existing road surrounding the McCarthy Flats ranges and a second road encompassing the South Range would be constructed. Dip ponds would be constructed at SBMP and South Range. A new fire access road would be constructed roughly following the western edge of the

existing pineapple fields at South Range. These mitigations are designed to minimize impacts from wildfires.

- **DMR:** A fire access road is planned for DMR. Fuel modification projects under consideration at DMR are maintenance of fuels along the Dillingham Military Vehicle Trail and may include prescribed burns. Areas that are overgrown would be managed through the application either of herbicide or by cutting the grass or shrubs. Prescribed burning would be used within the finished fire access road.

At KTA, non-live-fire training with pyrotechnic devices still has the potential to ignite wildfires; and the increased number of Soldiers training would increase the risk to causing wildfires.

The number of noise-generating events would increase proportionately with the increase in live-fire activity. Generally speaking, the quality and availability of habitat selection (for wildlife) tend to outweigh noise disturbance generated in that habitat, especially if the noise is not continuous, which is true for live-fire ranges. Live-fire ranges accommodate scheduled training, scheduled maintenance, and are not open year-round.

The noise response to military activities has been studied on a single Hawaiian species, *Chasiempis sandwichensis ibidus* (elepaio). VanderWerf (2000) recorded two responses to 238 artillery blasts. Both cases concerned an incubating male that was preening and had his head down at the time of the blast. The bird appeared to locate the source of the sound and returned to preening in seconds. When bird behavior was compared between Schofield Barrack's sites with a site without artillery blasts (Honouliuli Reserve), there was no statistical difference in incubation or nestling stages. Both attendance and hourly feeding rates were the same. Nest failure was the same between the two sites. Even with varying levels of sounds, there were no perceived effects. Distance is often the single most important predictor of response, followed by duration of the disturbance, visibility, number of disturbances per event, and stimulus position relative to the affected individual.

Maneuver would occur within the footprint of existing training areas at KTA, KLOA, SBER, SBMR, South Range, PTA, and DMR. Maneuver training would not change in intensity or type of use on O'ahu training areas or at PTA, though frequency of maneuver training events is anticipated to increase. Maneuver activities are projected to increase by between 10-15 percent at maneuver training sites within USAG-HI. These impacts would result in an associated risk of distribution of invasive species among training sites.

At SBMR and PTA, training would occur in existing maneuver areas. Maneuver impacts would result in a reduction of vegetative groundcover and may increase the risk for establishment of non-native vegetation in these areas. Habitats and wildlife would be impacted by loss of vegetation, deterring wildlife from foraging in these areas. Habitats that would be impacted on SBMR consist primarily of non-native vegetation.

Maneuvers would continue to occur throughout portions of SBER. Wildlife and vegetation found in this highly disturbed area is primarily non-native. Ground-dwelling wildlife and vegetation would be adversely impacted as a result of the increase in maneuvers. The increased use of trails under this scenario could result in the increase in the propagation of invasive species between training areas.

South Range was previously used for intensive agriculture. Potential increases in maneuver on existing trails may impact biological communities of the South Range through an increase in noise-generating events, potential further degradation of vegetation and soils (which could indirectly impact surface water) near the existing trail infrastructure, and through the potential for wildfire ignition. As discussed above, wildlife may adjust to the increase in noise-generating events; and the installation's ITAM and maintenance programs would continue to monitor and

mitigate impacts from increased maneuver events. As indicated above, fire mitigation measures are being implemented throughout the garrison on existing ranges and would be in place as a result of implementation of all alternatives.

At DMR, maneuver training would occur on established roads or trails, as well as areas currently designated for maneuver training throughout the installation, and may not affect native habitats. The natural communities within the boundary of DMR are two types of lowland dry communities that are on the cliff slopes at the southern end of the training area. These areas may not be used for maneuver training and therefore may not be affected.

The slopes at KTA are steep, and training activities are generally limited by the topography to dismounted maneuvers and vehicle travel on established roads. Vegetative regrowth is fairly rapid. The majority of the training area is non-native vegetation and common native plants, primarily grasses and shrubs, which typically colonize denuded areas quickly and thoroughly. Sensitive plant and wildlife species occur on KTA/KLOA. Manuka and heirba del solado are non-native plants that have recently been discovered in the ROI. USAG-HI would continue to implement their invasive species management programs to minimize the spread of these species throughout the training area.

At PTA, impacts to vegetation and general wildlife from the introduction of invasive species from additional live-fire training activities occurring within the general range area would be a significant impact mitigable to less than significant.

Overall, the impacts to biological resources from implementing Alternative 2 would be anticipated to be significant but mitigable.

Regulatory and Administrative Measure 1. The Army continually funds and implements USAG-HI-wide land management practices and procedures described in the ITAM annual work plan to reduce erosion and other soil and geologic impacts. Currently, these measures include implementing the ITAM program, implementing a Sustainable Range Awareness program, developing and enforcing range regulations, and continuing to implement land rehabilitation projects, as needed, within the LRAM program. Examples of erosion and sediment control measures identified in the ITAM annual work plan include stormwater runoff control structures (silt fences, hay bales, etc.) as part of standard BMPs, which would divert water from the construction sites. Standard range maintenance BMPs implemented by USAG-HI include road grading, target repair, and berm recontouring. Examples of current LRAM activities at USAG-HI include revegetation projects involving site preparation, liming, fertilization, seeding or hydroseeding, tree planting, irrigation, and mulching; combat trail maintenance program, coordination through the TCCC on road maintenance projects; and development mapping and GIS tools for identifying and tracking progress of mitigation measures. These mitigation measures would reduce loss of vegetation and biological soil components associated with maneuver training.

***Regulatory and Administrative Measure 2*.** Use of mitigation measures, planning considerations, and BMPs contained in the INRMP, Integrated Wildland Fire Management Plan, Biological Opinions, O'ahu Implementation Plan, and other guidance documents would minimize impacts to biological resources from invasive species to a significant but mitigable level.

4.18.8 Wetlands

4.18.8.1 Affected Environment

Table 4.18-5 identifies the wetlands and waterbodies examined as a part of recent wetlands inventories. Information on wetland types, hydrology, vegetation types, and locations in the document titled *Wetlands of USARHAW, Island of O'ahu, Hawai`i* (September, 2005).

Table 4.18-5. Summary of Wetlands and Water Bodies on U.S. Army Garrison-Hawai'i Properties

Garrison Property and Wetland Type	Wetlands and Water Bodies (acres)	Likely Wetlands, not Delineated (acres)	Regulated Wetlands (acres)
Schofield Barracks Main Post	**74.1377**	**72.8457**	**0**
South Range California Grass Areas	1.2920	0	0
Mount Ka'ala	72.8457	72.8457	0
Schofield Barracks East Range	**30.0616**	**0.4001**	**1.9112**
Ku Tree Dam and Reservoir	25.6334	0	0
Ko'olau Reservoir	1.0967	0	1.0967
NWI "Wetland"	0.7112	0	0
Cannon Dam Reservoir	1.9601	0	0
Sedge Pond	0.1713	0	0.1713
Bowl Wetland	0.6432	0	0.6432
KimChiMizu Waterbody	0.4001	0.4001	0
Kahuku Training Area	**2.2130**	**0**	**0.0588**
Ponded Water at O'io Stream	0.5038	0	0
Onion Pond	0.0588	0	0.0588
Kaunala Gulch Waterbody	0.7542	0	0
North California Grass Meadow	0.4074	0	0
Central California Grass Meadow	0.3187	0	0
South California Grass Meadow	0.1701	0	0
Kawailoa Training Area	**3.4515**	**3.0361**	**0**
Pe'ahinai 'a Pond	0.3160	0.3160	0
Lehua Makanoe Bog	1.2351	1.2351	0
Poamoho Pond	1.4850	1.4850	0
Frog Pond	0.4154	0	0
Dillingham Military Reservation	**14.2472**	**0**	**0.0834**
California Grass Meadow (north)	2.6527	0	0
California Grass Meadow (south)	11.5064	0	0
California Grass at Drainage Swale	0.0047	0	0
Perched wetland	0.0834	0	0.0834

There are two waterbodies located on SBMP and eight located at SBER. Figure 4.18-4 shows the location of Lake Wilson and a portion of the South Range area (bottom left).

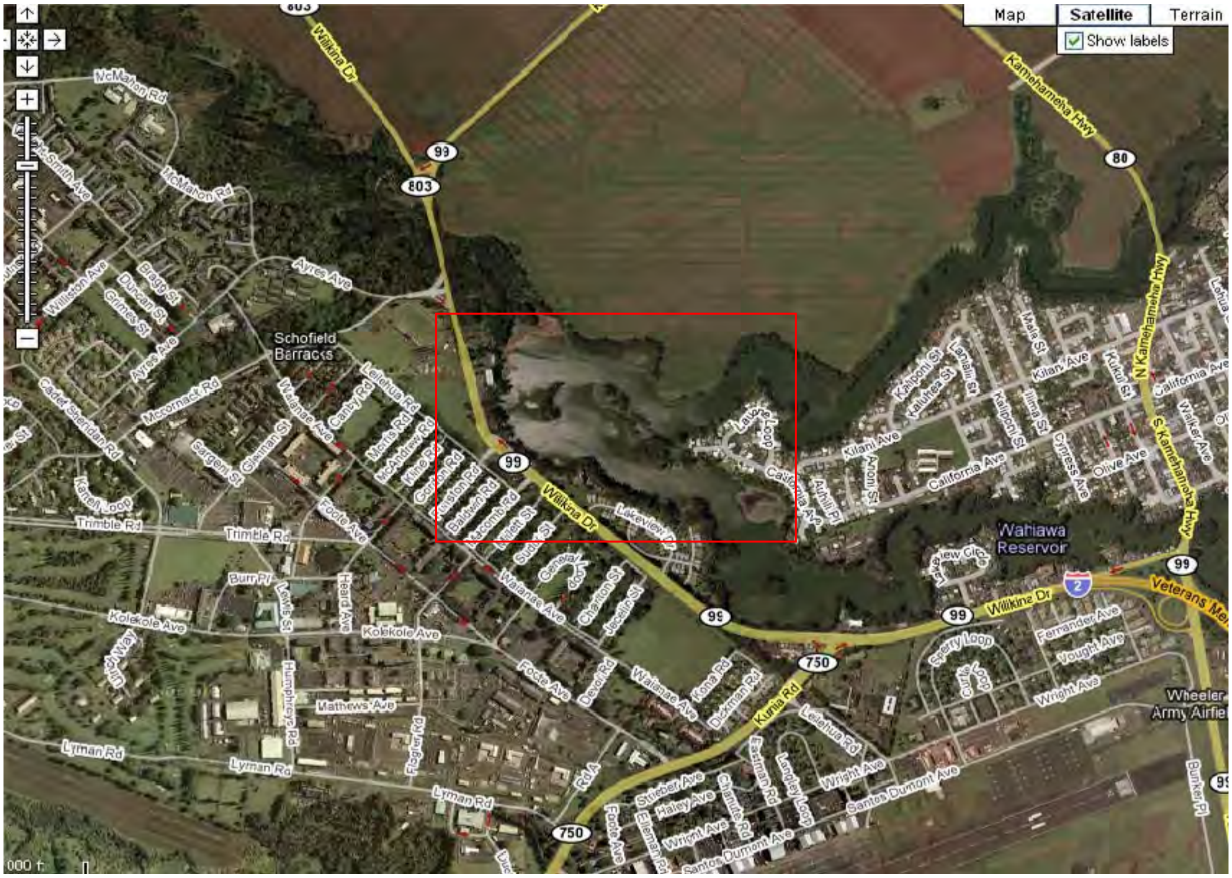

Figure 4.18-4. Location of Lake Wilson (center of map) as Compared to the South Range Acquisition Area

Of the eight waterbodies located at East Range, three are classified as regulated wetlands. Waterbodies there include the Ku Tree Dam and Reservoir area, constructed in 1925; the Koolau Reservoir located in training area ER-12; there is an unnamed wetland feature located on the northern bank of the south fork of Kaukonahua stream (a non-regulated wetland); Canon Dam and its upstream reservoir; Frog Pond located on the southeast side of Wintera Trail; the Sedge Pond; the Bowl wetland; and the KimChiMizu waterbody.

Four waterbodies are present on KTA. Three of these are located in high elevation areas at the installation's southern boundary. There is a pond along the O'io Stream which was formed by water accumulating behind a landslide (which is considered a stream and not a regulated wetland). There is also an open water regulated wetland (Onion Pond) at the southern portion of the training area; and an open water area in Kaunala Gulch at the southern portion of KTA. Other areas are dominated by California grass that supports some accumulation of water.

On KLOA there are three areas that are likely to be wetlands, but have not been verified; these include Peahinaia Pond, Lehua Makanoe Bog, and Poamoho Pond. The terrain in these areas is too steep and likely is not favorable to support military training.

At DMR, the California grass meadows are previously documented on the NWI map; however, each lacked the three necessary criteria required by the 1987 USACE Wetland Delineation Manual. Based on subsequent field visits and sampling points, it was determined that the perched, spring-fed wetland is the only site that meets all three USACE hydric indicators. The perched wetland may be subject to permitting by the USACE, which may in turn affect possible future development or on-going activities such as training. This, however, is unlikely due to its

isolated position on the slope of the mountain. Nonetheless, its conditions should be periodically monitored in the event plans are made that could potentially and negatively impact it.

There are no wetlands or jurisdictional waters of the U.S. within the boundaries of PTA, as the training area consists of extremely well drained soils. Therefore, wetlands at PTA are not discussed further in this section.

4.18.8.2 Environmental Consequences

No Action Alternative

Minor impacts to wetlands are anticipated under the No Action Alternative. Wetlands would be impacted through training, sedimentation, and construction to a minor extent each year. Very few regulated wetlands are present on USAG-HI, and impacts to wetlands from Army activities would not be anticipated. SOPs and BMPs designed to minimize impacts to wetlands and other waterbodies through stormwater and erosion control would continue to be followed for future construction projects. No wetlands have been identified at KLOA, and no live fire occurs at DMR, so no impacts to wetlands from live-fire training could occur at KLOA or DMR. On KTA, use of the Combined Arms Collective Training Facility (CACTF) range would take place more than 2 miles away from Onion Pond, a regulated wetland; therefore, no impacts to this wetland are anticipated to occur from training at the CACTF. SOPs and BMPs designed to minimize impacts to wetlands and non-regulated waterbodies through stormwater and erosion control would be followed.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor impacts are anticipated as result of the implementation of Alternative 1. Deconstruction of facilities could result in minor sedimentation into wetlands. The impacts would likely be negligible or minor because the USAG-HI has SWMPs in place to mitigate the effects of sediment transport. No new range construction would occur. In addition, none of the current ranges would be expanded. Therefore, no effects to wetlands are anticipated.

The number of required live-fire and maneuver training user days per year at USAG-HI would drop below current levels. Because the live-fire ranges were located to avoid significant wetland impacts, continued live-fire training is not anticipated to affect the function or presence of wetlands at USAG-HI. No new maneuver areas would be required and maneuver training would be conducted in the footprint of existing or previously approved ranges and trails at USAG-HI. Consequently, no change in impacts to wetlands from maneuver training is anticipated.

Alternative 2: Installation gain of up to 1,500 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

No wetlands would be impacted by proposed cantonment construction at SBMR as wetlands areas are not near potential construction sites. Mitigation measures concerning stormwater runoff are already in place. No additional effects from soil or sediment transport are anticipated. There are no wetlands located at or near the South Range area where potential construction could occur.

Onion Pond (at KTA) is located more than 2 miles from where training may occur; additionally, live munitions are not used in this training area; therefore, no additional effects are anticipated. There are no wetlands in the vicinity of other live-fire areas located on O'ahu, therefore no effects are anticipated. Live-fire activity increases would occur on existing and previously planned live-fire training areas designated for live-fire use on SBMR and South Range.

Maneuver training at SBMR (Mount Kaala) is not projected to affect wetlands areas. A wetland delineation of DMR identified one jurisdictional wetland. This perched wetland is within DMR but outside of the area that would be used for maneuver training. An additional wetland area was also investigated at DMR. Based on an evaluation by the USACE, Honolulu District, Regulatory Branch, dated September 4, 2002, the wetland area was determined to be non-jurisdictional and not regulated under Section 404 of the CWA. Because the wetland is outside of the maneuver training area, impacts are anticipated to be minor. Sedimentation resulting from maneuver training could have impacts on less proximate wetlands outside of SBMR and other maneuver training sites, but given that there are no wetlands in close proximity to maneuver areas on O'ahu, this is unlikely. No impacts would occur at PTA as there are no jurisdictional wetlands. Overall, minor impacts would occur at USAG-HI sites on O'ahu and no impacts on PTA.

4.18.9 Water Resources

4.18.9.1 Affected Environment

Watersheds. The ROI for these stationing scenarios involves the housing of Soldiers and their equipment on the Island of O'ahu, and training at ranges on O'ahu and the Island of Hawai`i. Rainfall throughout the ROI is unevenly distributed and highly dependent on elevation. Above 3,000 feet above MSL both islands are relatively dry. The maximum amount of rainfall occurs at elevations between 2,000 and 3,000 feet above MSL. At SBMP, the average annual rainfall is between 43-45 inches per year. Comparatively, Wheeler Army Airfield has an average rainfall of 38 inches; SBER varies from 200 inches on the crest of Koolau Range to 40 inches near Wahiawa; at KTA and KLOA rainfall ranges from 40 to 50 inches near the coast to about 150 inches at the summit of the Koolau Mountains; and DMR ranges experience an average rainfall of 20 to 30 inches annually, however the amounts vary by elevation and time of year.

SBMR lies near the drainage divide between the Kaukonahua watershed and the Waikele watershed. The principal surface water feature of the Kaukonahua watershed is the Wahiawa Reservoir (Lake Wilson), which lies just outside the eastern boundary of SBMR, east of Highway 99. The reservoir stores drainage from tributaries of the Kaukonahua Stream that originate in the Koolau Range. The reservoir receives small amounts of surface drainage from the eastern side of SBMR and is used for agricultural irrigation. The main drainages at SBMR are the Waikoloa Gulch and the Waikele Stream. The Waikoloa Gulch drains the area just north of the cantonment and joins the Kaukonahua Stream below Wahiawa Reservoir. Two other streams that drain the north part of SBMR (Mohiakea Gulch and Haleanau Gulch) are tributaries to the Kaukonahua Stream. Kaukonahua Stream drains northward through the area underlain by the Waialua aquifer system, joining the Poamoho Stream to form the Kiikii Stream, which discharges to Kaiaka Bay just east of Waialua. Streams in lower reaches of SBMR tend to be intermittent because runoff from small storms is absorbed in bedrock fractures and never reaches the plateau. Runoff from larger or more intense storms overwhelms the capacity of these fracture systems and continues to flow onto the plateau. Waikele Stream, which originates in the Honouliuli Forest Preserve along the east slope of the Waianae Range south of SBMR, drains the south boundary of SBMR. It flows south along the west side of Wheeler Army Airfield, across land overlying the Waipahu-Waiawa aquifer system, and eventually discharges to the West Loch of Pearl Harbor.

Wheeler Army Airfield is bounded by SBMR, Wahiawa Reservoir, the Kamehameha Highway, and Waikele Stream. Surface drainage from Wheeler Army Airfield drains to Waikele Gulch. Runoff from the runway area is reportedly collected in a network of grated drains that drain to a 15-inch-diameter storm drain believed to discharge to Waikele Gulch.

SBER (for the most part) lies within the Kaukonahua watershed. The southern boundary of SBER lies on or near the topographic divide separating the Kaukonahua watershed from the Waikele watershed. Therefore, some surface water from SBER may drain to the Waikakalaua Stream, which ultimately drains south to the West Loch of Pearl Harbor. Most of SBER is drained by the South Fork of Kaukonahua Stream, which discharges to the Wahiawa Reservoir. The Kaukonahua Stream, downstream of Wahiawa Reservoir, ultimately discharges to Kaiaka Bay at Haleiwa. Kaukonahua Stream, at 33 miles, is the longest stream on O'ahu and the longest perennial stream. SBER extends to the crest of the Koolau Range, which has the highest rainfall on O'ahu. Thus, the east side of SBER is an important source region for surface water supplies. A number of reservoirs and surface water conveyances (ditches and tunnels) have been constructed along the Kaukonahua Stream drainage and its tributaries. The Ku Tree Reservoir is the largest of these water storage facilities.

The Poamoho watershed is drained by the Poamoho Stream and several smaller streams. The Upper Helemano Reservoir is east of the Helemano Trail and stores water for irrigation. The water is conveyed to farmland in the Poamoho watershed through a network of canals and ditches, some of which follow existing drainages.

The South Range area is drained by Waikele Stream and its tributaries and lies entirely within the portion of the watershed of Waikele Stream that is upstream of Wheeler Army Airfield. The tributaries to Waikele Stream are ephemeral and generally dry except during short periods following heavy rainfall.

KTA contains portions of four watersheds: Paumalu, Kawela, Oio, and Malaekahana watersheds. The Paumalu watershed in the west includes drainages from Paumalu Stream on the west to Waialee Gulch on the east. The headwaters of the Paumalu Stream are in the Pupukea Paumalu Forest Reserve, most of which is within the boundaries of KTA. KTA does not include the downstream portion of the Paumalu Stream, but most of the watershed east of the Paumalu drainage, almost to the Kamehameha Highway, is on KTA. To the east of Paumalu watershed is the Kawela watershed, which includes the streams that drain to Kawela Bay (Pahipahialua Stream and Kawela Stream). East of Paumalu and Kawela watersheds is the Oio watershed, which includes the upper portions of drainages from Oio Gulch east to Keaaulu Gulch, which discharges at the Town of Kahuku. Adjacent to the Oio watershed is the Malaekahana watershed, which consists of the upper drainage of Malaekahana Stream. The lower reaches of many of these streams have been diverted or captured for irrigation and flood control, but the upper reaches, on KTA, are generally the natural drainages. All streams and gulches on KTA are intermittent except for Malaekahana Stream, which is perennial.

Drum Road runs along the west slope of the Koolau Mountain Range and across the Schofield Plateau, from KTA, through KLOA to SBMR. Outside of KTA, Drum Road crosses several watersheds. Waimea watershed is drained by several streams including Kauwalu Gulch, Elehaha Stream, Kamananui Stream, and Kaiwikoele Stream. Kauwalu Gulch and Elehaha Stream are both intermittent, while Kamananui and Kaiwikoele Streams are both perennial. Elehaha and Kamananui Streams are tributaries of the Waimea River. Drum Road passes along the ridge that forms the boundary between the head of the Keamanea, Waimea, and Kawailoa watersheds, northwest of Puu Kapu where eventually the road crosses inside KLOA. West of Puu Kapu, it crosses Kawailoa watershed and then follows the ridge separating the Kawainui and Kawaiiki watersheds (on the east) from the Anahulu watershed (to the west). The Kawailoa watershed is a narrow east-west trending strip of land, north of Puu Kapu that does not have any surface outflow but probably drains below the surface to the adjacent watersheds. The Kawainui and Kawaiiki Streams (both perennial streams) are tributaries of the Anahulu River, which occupies the Kawailoa Gulch and discharges at Waialua Bay, north of Haleiwa. The junction of the two streams marks the head of the Anahulu watershed. The road follows the

boundary of the Kawaiiki watershed, then turns sharply west and continues along the ridge separating the Anahulu watershed and the Opaeula watershed. The Opaeula Reservoir is in the Anahulu watershed, but is recharged by diversions from the Kawaiiki and Opaeula streams via ditches or tunnels that cross the watershed boundaries. Southwest of the Opaeula Reservoir, Drum Road crosses the Opaeula watershed and the Opaeula Stream (a perennial stream) and then follows Twin Bridge Road west of Bryans Mountain House. This segment of the trail is on the boundary between the Opaeula watershed and the Helemano watershed.

The majority of DMR is located in the Kawaihapai watershed. The most extreme eastern portion of DMR is located in the Pahole Watershed. Dillingham Trail is located in the Kawaihapai, Pahole, and Makaleha watersheds. Several unnamed intermittent streams occur on the training area. DMR is on the north slope or at the foot of Kaala Mountain and the northwest-trending ridge of the Waianae Range. Most of the streams carry intermittent flows and are subject to short duration flash floods following rainfall events.

Rainfall is the primary source of groundwater recharge on Hawai'i Island; Hawai'i Island has the highest recharge rate among the Hawaiian Islands (USACE, 2008a). Rainfall, fog drip and occasional frost are the main sources of water for the biological resources found on PTA. PTA experiences an average rainfall of 10 to 16 inches annually.

Water Supply. Demand for water has been growing in the Ewa area of O'ahu, but the windward side of the island currently has sufficient supplies. Water is supplied to SBMR through pipelines; whereas, water must be trucked in to KTA and KLOA.

Potable water is supplied to SBMR and Wheeler Army Airfield by a well and water treatment facility located on SBER. This facility produces and treats 4.0 to 9.0 mgd. The State of Hawai`i Department of Land and Natural Resources permit allocates a 12-month moving average of 5.648 mgd to the Army from the groundwater aquifer. The average ranges from a low of 3.849 mgd in January to a high of 6.948 mgd in September.

Based on a demand factor of 1.3 per person and a domestic allowance of 150 gallons (568 liters) per capita per day, the domestic daily demand was estimated at 4.13 mgd in the 1993 Real Property Master Plan. The average estimated daily demand of Schofield Barracks was 3.059 mgd, as identified in the Real Property Master Plan (Belt Collins, 1993). Peak daily demands were estimated at 2.5 times the average.

There is no water infrastructure for the South Range area. At PTA, there is no water supply and all water must be trucked approximately 40 miles.

***Wastewater*.** Wastewater treatment in Hawai`i is accomplished by WWTPs and by underground injection control (UIC). Wastewater is conveyed from SBMR to the treatment plant at Wheeler Army Airfield using a gravity system. The Wheeler Army Airfield plant is a secondary treatment facility that was constructed in 1976 and has been upgraded to a capacity of 4.2 mgd. How much is used? The system does not have redundant backup, so continuous maintenance is required to avoid spills. The Army has recently upgraded the treatment level from secondary to advanced tertiary.

The Schofield Barracks WWTP has a design capacity of 4.2 mgd and processes an average daily flow of 2.6 mgd from the installation, Wheeler Army Airfield, and other nearby Army facilities.

PTA does not currently have any wastewater infrastructure (e.g., sewer system). In 2004, EPA Region IX required the conversion or removal of all large capacity cesspools. The Army complied with federal and state cesspool regulations by converting its large capacity cesspools to septic systems and utilizing UIC wells. Permits for UICs are issued by Hawai'i Department of

Health, Safe Drinking Water Branch. All wastewater at PTA is handled through a combination of portable latrines, septic tanks and/or UIC wells in accordance with Hawai'i Department of Health, Safe Drinking Water Branch, UIC permit UH-2609. Injectant from permit UH-2609 is limited to septic tank-treated domestic wastewater from five separate septic tank wastewater treatment systems at PTA. Under this permit, the state requires the Army to conduct daily monitoring, quarterly sampling, periodic inspections, and annual status reporting. On-site staff at PTA completes these regulatory requirements for submittal to Hawai'i Department of Health, Safe Drinking Water Branch.

Stormwater. According to Hawai`i's 1998 305(b) report, most of the state's waterbodies have variable water quality that declines when stormwater runoff carries pollutants into surface waters. The most significant surface water pollution problems in Hawai`i are siltation, turbidity, nutrients, organic enrichment, toxins, pathogens, and pH from nonpoint sources, including agriculture and urban runoff. Stormwater runoff from SBMR and O'ahu training sites may affect the waterways and drainage areas described under the subheading "Watersheds" above.

The vast majority of PTA consists of variable permeable surfaces that easily allow rain to infiltrate naturally. PTA has a SWMP in place.

4.18.9.2 Environmental Consequences

No Action Alternative

Water supply and wastewater facilities are adequate and only routine upgrades and maintenance would occur. USAG-HI has plenty of potable water to meet water demands to support its operations. SOPs and BMPs designed to minimize impacts to surface and groundwater through stormwater and erosion control would continue to be followed. No changes in maneuver or live fire would change impacts to surface or groundwater. Overall minor impacts would occur at SBMR and PTA.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Minor impacts are anticipated as a result of the implementation of Alternative 1. An increase in the FRP and facilities demolition at USAG-HI would occur as part of this scenario at SBMP and Fort Shafter. Older, less efficient facilities nearing the end of their life-cycle would be demolished when no longer needed to support Soldiers or their Families.

The number of Soldiers at SBMR would decrease by approximately 30 percent, and the existing water and wastewater infrastructure would not require modifications other than routine maintenance. Range and cantonment construction projects would proceed as they are planned. Standard construction BMPs would be followed to maintain less than significant impacts from runoff to surface and groundwater. Continued implementation of the ITAM and Operational Range Assessment programs would minimize impacts from live-fire and maneuver training and maintain them at a less than significant level.

Cantonment Construction. No additional cantonment construction is required in USAG-HI as a result of this alternative. With existing, on-going Army projects, the garrison has critical facilities available to support existing units' living, administrative, and vehicle maintenance requirements. Additionally, some construction renovation may occur at SBMR on as needed basis in the future. Water supply and wastewater facilities are adequate and only routine upgrades and maintenance would occur. SOPs and BMPs designed to minimize impacts to surface and groundwater through stormwater and erosion control would continue to be followed. No impacts would occur.

Range Infrastructure Construction. There is no difference in impacts from range infrastructure construction between the No Action Alternative and Alternative 1.

Live-Fire Training. There would be no change in the type of rounds used during live-fire training at O'ahu ranges. Nonetheless, training ranges have the potential to carry contamination resulting from decades of use. Contaminants associated with military activities include residues of explosives or other constituents of munitions such as metals, constituents of plastics, or combustion products. Other chemical pollutants, such as petroleum hydrocarbon fuels or lubricants, may be inadvertently spilled or released as an indirect result of military activities. To better understand the potential impacts from this, the Army has started an assessment of offsite potential for contaminants at Schofield Barracks under the Operational Range Assessment Program. Preliminary results show no contamination of surface water by explosive residues, and less than significant impacts are anticipated to continue under the reduction alternative.

Maneuver Training. Maneuver training would continue to occur at SBMR, DMR, and KTA. Maneuver training would remain a combination of on-road and off-road areas on O'ahu. The same number or fewer MIMs would be executed at designated maneuver training areas. Maneuver training could involve the possibility of accidental spills of petroleum products (from fuel or hydraulic lines) or other chemicals. Maneuver training would continue to cause sedimentation and turbidity in waterbodies, a potential significant impact. Continued implementation of the ITAM and Operational Range Assessment programs would minimize these impacts and maintain them at a less than significant level.

Overall impacts as a result of this alternative would be minor at USAG-HI sites on O'ahu and at PTA.

Alternative 2: Installation gain of up to 1,500 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

At SBMR, the addition of Soldiers would require the addition of water transport lines to support cantonment construction. An additional 1-million-gallon potable water storage tank would be needed to support the additional Soldiers and their Families.

The current wastewater collection system at the installation would require additional upgrades in order to accommodate the additional flow (upgrades may include new sewer lines or extensions to existing lines). In order to determine the scope of any upgrades, the installation project manager for design would need to conduct modeling of the collection system. DPW Utilities Wastewater Manager and/or Aqua Engineers would review the modeling information and approve the results.

The WWTP at Schofield Barracks would require a minor upgrade to support the increase in 1,500 Soldiers if the Soldiers' Families are housed off post, and this is identified as a mitigation measure; The addition of the 1,500 Soldiers' Families on post would require a major WWTP upgrade. The addition of housing and the WWTP would be subject to additional NEPA analysis.

Lake Wilson and all nearby waterbodies may experience impacts from construction due to stormwater runoff (effects would include an increase in turbidity); however, these effects may be temporary and should prove mitigable. All work in gullies would require Army 404, State Department of Health, 401 (clean water) and NPDES permits if work were to be conducted at or near existing waterways. Any roadway construction or improvement may require provisions for stormwater drainage and/or detention basins to handle run-off from built or paved areas. Pesticides existing in soils at South Range may impact nearby waterbodies during construction due to stormwater runoff. Implementation of BMPs and mitigations to minimize runoff from construction sites would be required. Due to its location, stormwater runoff from South Range has the potential to affect waterways outside the installation boundary and on Wheeler Army Airfield. As TMDLs are developed by the state for impaired waterbodies, it is likely that USAG-

HI would receive a waste load allocation and would need to develop additional BMPs to reduce pollutant loads in stormwater discharges

Long-term minor effects may occur due to water consumption. As indicated above, the water treatment facility supplying potable water to SBMR and Wheeler Army Airfield is currently operating below capacity. There would be adequate potable water capacity to accommodate growth under Alternative 2.

During ground preparation for new construction sites, grading, excavating, and trenching may expose erodible soils to stormwater runoff and increase the potential for sediments to contaminate surface waters. Similarly, broken hydraulic lines on heavy equipment could spill chemicals during equipment refueling, and chemical solvents, paints, and other chemicals used in construction could also be spilled. These potential impacts would be reduced to acceptable levels by implementing standard construction BMPs.

Chemicals, such as petroleum hydrocarbons that may spill or leak onto soils as a result of vehicle use or refueling, could be bound to soil particles and then transported to surface water by erosion. These impacts are anticipated to be less than significant because spills would be addressed effectively through standard procedures.

The added live-fire training would increase lead and other materials on ranges. Runoff from impacted berms and disrupted soils is possible as the added live-fire activity may increase sediment transported to streams draining the ranges, and ultimately to surface waters beyond the installation boundary. In the absence of mitigation, an increase in sediment erosion could result in greater impacts, possibly in exceedances of health-based standards or antidegradation policy goals. The Army has started an assessment of offsite potential for contaminants at Schofield Barracks under the Operational Range Assessment Program. Samples of surface soils from selected areas on the training ranges were collected and analyzed, and these data provide an indication of the concentrations of metals, semi-VOCs, and explosive material in surface soils that could be transported to surface water. While still in the early stages of the assessment, preliminary results show no contamination of surface water. Installation DPW staff monitors impacts from live-fire activities and would continue to institute the required mitigations and BMPs (such as berm revegetation and regrading) to minimize effects off the firing ranges. Other chemical pollutants, such as petroleum hydrocarbon fuels or lubricants, may indirectly affect water quality resulting from vehicles parked at the training sites.

The risk of wildland fires is anticipated to remain at about the same level as under existing conditions or slightly higher due to the increase in live-fire activity associated with Combat Support stationing scenarios. The potential for wildland fires is anticipated to be low but could increase when the land is fallowed due to growth of grasses and other vegetation. Wildland fires can generate chemical contaminants and loss of vegetation can increase the potential for soil erosion and sediment loading to streams. Either of these effects could result in adverse impacts on water quality.

Additional maneuver traffic on the range road network and stream crossings (at KTA, SBER, or KLOA) during maneuvers may contribute to increased sedimentation and turbidity in waterbodies. Off-road maneuvers of Combat Support units would be projected to account for a larger increase in off-road sedimentation impacts to surface waters, resultant from a loss of vegetative cover and associated loss of soils carried to surface water by wind and water erosion. No new type of maneuver or maneuver land use is being proposed for USAG-HI training areas. All uses would be increases to existing maneuver land use anticipated to increase up to 10 to 15 percent of USAG-HI total maneuver training load at maneuver training areas on O'ahu and at PTA.

Efforts to reinforce stream crossings or monitor those areas for decreased water quality may also be considered. Further, bivouac sites in the training area may also need to be monitored and maintained more closely to ensure against stormwater runoff that may stem from the effects of increased Soldier throughput in those areas.

Minor impacts would occur to wastewater and stormwater at DMR. The amount of additional training there may not be substantial and would be supported by existing facilities. These areas were to be improved to accommodate training from the 2/25th SBCT; these include drainage improvements, culverts at stream crossings, grass and concrete swales, and drainage structures and lines to manage stormwater runoff.

Regulatory and Administrative Measure 1. Implementing Phase II Stormwater Management Regulations of the CWA, ITAM and construction BMPs would reduce nonpoint source contamination of surface water to less than significant.

Regulatory and Administrative Measure 2. The Army continually funds and implements USAG-HI-wide land management practices and procedures described in the ITAM annual work plan to reduce erosion and other soil and geologic impacts. Currently, these measures include implementing a Training Requirements Integration program, implementing an ITAM program, implementing a Sustainable Range Awareness program, developing and enforcing range regulations, and continuing to implement land rehabilitation projects, as needed, within the LRAM program. Examples of erosion and sediment control measures identified in the ITAM annual work plan include stormwater runoff control structures (silt fences, hay bales, etc.) as part of standard BMPs, which would divert water from the construction sites. Standard range maintenance BMPs implemented by USAG-HI include road grading, target repair, and berm recontouring. Examples of current LRAM activities at USAG-HI include revegetation projects involving site preparation, liming, fertilization, seeding or hydroseeding, tree planting, irrigation, and mulching; combat trail maintenance program, coordination through the TCCC on road maintenance projects; and development mapping and GIS tools for identifying and tracking progress of mitigation measures. These mitigation measures would reduce loss of vegetation and biological soil components associated with maneuver training.

Overall impacts to water resources would be significant but mitigable at SBMR and O'ahu training sites, and less than significant at PTA.

4.18.10 Facilities

4.18.10.1 Affected Environment

To manage land, facilities, and infrastructure, USAG-HI has prepared a Real Property Master Plan. AR 210-10, Real Property Master Planning, guides USAG-HI's real property planning process. Family housing, barracks, offices, roads, recreational areas, live-fire ranges, and maneuver areas are all real property assets occupying Army lands. USAG-HI currently has the housing (on and off post), ranges and training facilities to accommodate its Soldiers and their Families.

4.18.10.2 Environmental Consequences

No Action Alternative

Impacts to facilities would be minor under the No Action Alternative because USAG-HI currently has adequate facilities available to support its Soldiers, Families, and missions. The installation would continue to implement the Army's FRP at USAG-HI. Environmental analyses of the projects that result from these programs are conducted prior to implementation of facilities deconstruction.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Beneficial impacts are anticipated as a result of the implementation of Alternative 1. An increase in the FRP and facilities demolition at USAG-HI would occur as a result of this scenario. Older, less efficient facilities nearing the end of their life-cycle would be demolished when no longer needed to support Soldiers or their Families to reduce maintenance and energy requirements. Facility usage and availability for the remaining population would not be affected. Minor long-term effects are anticipated as a result of required building demolition, solid waste disposal, and site recapitalization, and the repurposing of existing facilities to accommodate different Army needs as a result of force reduction. A reduction scenario would not result in the alteration or relocation of existing utility systems or expansion of existing installation facilities. A reduction in troop strength would impact the local housing community, on-post support services, the barracks program, and associated Army civilian staffing requirements. A reduction by 8,000 Soldiers would reduce MILCON requirements, reduce the strain on utility/infrastructure systems, and result in less traffic and parking issues across the installation. Any reduction of troops to the installation would result in more facilities being available to remaining Units, less traffic, and less congestion at ACPs and potential for more open and green space.

Beneficial impacts are anticipated as a result of the implementation of Alternative 1. An increase in the FRP and facilities demolition at USAG-HI would occur as a result of this scenario. Older, less efficient facilities nearing the end of their life-cycle would be demolished when no longer needed to support Soldiers or their Families to save the Army on maintenance and energy requirements. Facility usage and availability for the remaining population would not be affected. Minor long-term effects are anticipated as a result of required building demolition, solid waste disposal, and site recapitalization, and the repurposing of existing facilities to accommodate different Army needs as part of force reduction. A reduction scenario would not result in the alteration or relocation of existing utility systems or expansion of existing installation facilities. A reduction in troop strength would impact on-post support services and associated Army civilian staffing requirements. A reduction by 8,000 Soldiers would significantly reduce MILCON requirements and create an overall cost savings of $849 million to the Army MILCON program. Future projects that would not be required include Barracks PN76586 ($41 million), PN76587 ($55 million) PN76903 ($85 million); Company Operations Facilities (COF's) PN76583 ($90 million), PN76584 ($90 million); Brigade and Battalion Headquarters PN31311 ($61 million), PN67176 ($89 million); Tactical Equipment Maintenance Facilities PN52582 ($84 million), PN76591 ($31 million), PN76580 ($67 million), PN76581 ($64 million); and Parking Structures PN60058 ($37 million), PN60057 ($26 million), PN31311 ($29 million). There would no longer be the requirement for 23 relocatable trailers at Hamilton, Martinez, and Duck Fields that are currently being used as interim administrative space for Soldiers awaiting the award and construction of COF and BOF MILCON projects. Additional benefits include reduced strain on utility/infrastructure systems resulting in less traffic and parking issues across the installation. The reduction of 8,000 Soldiers and Army civilians would also reduce water usage by approximately 700,000 gpd, and automobile fuel consumption would be reduced by 14,560,000 gallons/year saving the precious natural resources on the island. Any reduction of troops to the installation would result in more facilities being available to remaining Units, less traffic, and less congestion at ACPs and potential for more open and green space.

Alternative 2: Installation gain of up to 1,500 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Since 2004 Hawai'i has had at least one Brigade deployed almost continuously. During this timeframe, despite the reduced population, Schofield Barracks has experienced base-crowding issues with insufficient parking, crowded roadways, failed or failing utility systems, inadequate ACPs and other issues inherent with high density population. SBMR would need a substantial amount of MILCON projects and conduct considerable facilities upgrades to accommodate an additional 1,500 Soldiers and their Families.

The use of Army facilities would continue as they are currently designed. Demand for public services may increase slightly from existing levels. Ranges would degrade with continued use, but impacts would be less than significant as the ranges would be repaired and maintained. Construction of facilities at SBMR would occur as infill (built among existing structures and infrastructure) with demolition of existing facilities in the cantonment area. In addition, new infrastructure, utility lines, sewage lines and water lines would need to be built to support construction of garrison facilities to support Units as a result of this stationing scenario in Hawai'i.

The Army in Hawai'i is still building facilities to accommodate recent growth. Alternative 2 would require a large investment in military construction funds for facilities, utilities, and ACP. There would be a significant adverse impact unless the projects necessary to support Alternative 2 are funded.

Cantonment Construction. In 2004, the Army transformed to a Modular Force structure; however, numerous MILCON projects are still required to support the transformation to a modular force in Hawai'i. The programmed MILCONs address only barracks requirements but do not address motor pools, operational facilities, infrastructure, traffic or ACP upgrades required across the installations to support any added population. Facilities and infrastructure projects must be provided to support installation operations. Without these projects, significant impacts would result. These projects and facilities are identified as mitigation necessary to reduce impacts to less-than-significant.

Overall impacts to facilities as a result of the implementation of Alternative 2 would be significant but mitigable with the construction of additional facilities.

Range Infrastructure Construction. Range maintenance projects on existing ranges would proceed as needed. Maintenance projects would not add new facilities to the inventory of facilities on O'ahu. These projects would slightly increase the demand for utilities and public services. The overall effects of the range construction projects would be less than significant.

Live-Fire Training. Use of live-fire training areas would continue at ranges currently available. On-going use of live-fire training areas would continue to degrade these facilities. With continued implementation of regulatory and administrative mitigation such as ITAM, INRMPs, ecosystem management, and the sustainable range management program, impacts to facilities may still increase. There would be less down time and increased throughput until maximum capacity is reached. Impacts are anticipated to be significant.

Maneuver Training. Use of maneuver training areas would continue at maneuver areas currently available for maneuver use. On-going use of maneuver training areas would continue to degrade these facilities. However, with continued implementation of regulatory and administrative mitigation such as ITAM, INRMPs, ecosystem management, and the sustainable range management program, impacts to facilities are anticipated to be less than significant.

Overall impacts to facilities from the implementation of Alternative 2 would be significant, but mitigable by necessary construction at SBMR and O'ahu training sites and less than significant at PTA.

4.18.11 Socioeconomics

4.18.11.1 Affected Environment

Schofield Barracks is located in the central part of the Island of O'ahu, near to the Town of Wahiawa. It is a census-designated place in the City and County of Honolulu and in the Wahiawa District. The ROI associated with the Proposed Action includes the County of Honolulu, located on O'ahu where Schofield Barracks and its designated training areas (South Range, East Range, KTA, and KLOA) are located. This is where a vast majority of Soldiers and Army civilians reside and is where economic impacts associated with the Proposed Action would occur. Honolulu County covers the entire Island of O'ahu. Honolulu County is further divided into seven Census County Divisions (CCDs) which are Ewa, Honolulu, Koolauloa, Koolaupoko, Wahaiwa, Waialua, and Waianae; each is a permanent statistical area established cooperatively by the state and local governments with the U.S. Census Bureau. KTA is located within the Koolauloa CCD; DMR resides within the Waialua CCD; and Schofield Barracks resides within the Wahiawa CCD.

Population and Demographics. The Schofield Barracks population is measured in three different ways. The daily working population is 18,441, and consists of Soldiers and Army civilians working on post. The population that lives on Schofield Barracks consists of 11,806 Soldiers and 25,993 dependents, for a total on-post resident population of 37,799. Finally, the portion of the ROI population related to Schofield Barracks is 16,720 and consists of Soldiers, civilian employees, and their dependents living off post.

The ROI population is 953,000. The 2010 population increased 8.8 percent over the year 2000.

The racial and ethnic percentage composition of the ROI population is Caucasians 19, African Americans 2, Hispanics 8, Asians 43, Native American 0, Multiracial 19, and Other Groups 9, respectively. This is comparable to the state composition.

The population surrounding DMR represented approximately 1.5 percent of the population of Honolulu County, and by the year 2009 decreased to an estimated 13,812 residents (from 14,027 residents in 2000). Approximately 62 percent of the area (Waialua CCD) is made up of minority ethnic groups, the largest percent of which is Asian/Pacific Islander (30.9 percent of the population). No military or civilian personnel are permanently stationed or reside at DMR.

For KTA, the population within the Koolauloa CCD represents approximately 2.1 percent of Honolulu County. In 2009, nearly 18,923 residents resided in this region. Approximately 63 percent of the population was comprised of minority ethnic groups, the largest percent of which is Asian/Pacific Islander (35.0 percent of the population). No military or civilian personnel are permanently stationed or reside at KTA.

For KLOA, the population is made up of the demographics described for the Waialua and Koolauloa CCDs (as previously described). No military or civilian personnel are permanently stationed or reside at KLOA.

Soldiers home-stationed at SBMR live on post or live in off-post housing, within commuting distance from the installation. Due to the size of O'ahu (approximately 44 miles long and 30 miles wide) Soldiers stationed at Schofield Barracks may reside off post virtually anywhere on O'ahu; therefore, stationing new units on O'ahu has the potential to influence school enrollment throughout the Island of O'ahu.

Employment and Income. From 2000, the 2009 employment (private nonfarm) increased by 7.20 percent in Honolulu County and state employment increased by 13.01 percent. The overall private nonfarm employment total for Honolulu County in 2009 was 338,594. Overall private nonfarm employment for the State of Hawai'i in 2009 was 488,403. The 2005-2009 median home value was $537,800 in Honolulu County, and the state median value was $521,500. The 2009 median household income was $67,019 in Honolulu County, and state median income was $63,741. Based on 2009 data, the percent of the population below the poverty level was 9.70 percent for Honolulu County; the state poverty level was 10.40 percent. The unemployment rate in Honolulu County was 5.6 percent at the end of 2011, which is below the state average. The total number of housing units on the island is 334,469; of those 133,659 are renter occupied (2009).

Housing. USAG-HI can accommodate approximately 40 percent of the permanent party Soldier population with dependents assigned to the installations. There are currently 7,437 homes on USAG-HI installations that are managed through an RCI partnership that has been in place since 2005. Occupancy for on-post housing averages 99 percent annually and the waiting list exceeds 1,000 service members. Under RCI, the initial development period will result in an end state of homes of 7,756 in the year 2020. Unaccompanied Personnel Housing on USAG-HI installations consist of 6,720 spaces in 60 buildings located on five installations. Overall occupancy rate without deployments is 95 percent. Off-post housing consists primarily of high rise condominiums, multi-family dwellings, duplexes, and single homes. While there is an adequate supply of one and two bedroom apartments/condominiums available in the local economy, there is a shortfall of affordable three, four, and five bedroom homes as identified in the 2008 HMA for O'ahu. Forty percent of Soldiers with dependents are housed in Family housing on post while 60 percent reside in the surrounding civilian community (ROI), mostly in rental units. Ninety-five percent of unaccompanied Soldiers, E-5 and below, will be housed in barracks on post. Single Soldiers in the grade of E-6 and above are authorized to reside off post.

Schools. Unlike many states, Hawai'i is made up of one school district, which makes the island one of the 10 largest school districts in the U.S. There is only one State Superintendent who administers issues pertaining to the education of 170,000 students. Because the Army installations belong to this one large district, overcrowded conditions at on-post schools have caused some concerns. The classroom size is large and some of the base's students have to be transported to the neighboring schools. Other problems that must be addressed include overcrowded CYSS facilities, lack of funding for school transportation, the effect on extracurricular activities, and the possibility of a new school on base. Currently, the five base schools have the following enrollments: Hale Kula Elementary (1,000), Solomon Elementary (1,000), Wheeler Elementary (675), Shafter Elementary (375), and Wheeler Middle (900). The addition or subtraction of troops and their children are of concern.

Public Health and Safety.

- **Police and Security Services.** The USAG-HI Directorate of Emergency Services (DES) oversees police operations, physical security, access control, and wildland fire and emergency services. The City and County of Honolulu Police Department also provide law enforcement services since there is concurrent jurisdiction on all USAG-HI installations. However, the majority of law enforcement activities on post are provided by DES.
- **Fire and Emergency Services.** The Federal Fire Department (U.S. Navy) manages the installation structural fire program. The Federal Fire Department responds to emergencies involving structures, facilities, transportation equipment, hazardous

materials, and natural and man-made disasters, and directs fire prevention activities; and conducts public education programs. The Federal Fire Department has mutual aid agreements with the City and County of Honolulu.

- **Medical Facilities.** USAG-HI on-post medical services are administered at the installation clinics. This facility services all permanent party, Active Duty personnel and their dependents, as well as retirees and their dependents, within a 20-mile radius of the post. The Schofield Barracks Health Clinic functions as an outpatient treatment facility only. Acute care, specialty services, and long-term medical needs for military Families on O'ahu are provided by the Tripler Army Medical Center next to Fort Shafter.

4.18.11.2 Environmental Consequences

No Action Alternative

There would be no change or minor impacts anticipated from the No Action Alternative. This alternative would be anticipated to provide a steady-state contribution of economic and social benefits and costs. No additional impacts to housing, public and social services, public schools, public safety, or recreational activities is anticipated.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of up to 8,000 military employees (Soldiers and Army civilians), each with an average annual income of $41,830. In addition, this alternative would affect an estimated 4,464 spouses and 7,680 dependent children, for a total estimated potential impact to 12,144 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 20,144 military employees and their dependents.

Based on the EIFS analysis, there would be significant socioeconomic impacts for population and employment in the ROI for this alternative. There would be no significant impacts for sales volume or income. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.18-6. Table 4.18-7 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.18-6. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	11.96	10.83	3.64	3.50
Economic Contraction Significance Value	- 4.16	- 4.04	- 1.78	- 0.94
Forecast Value	- 1.38	- 1.99	- 2.89	- 2.03

Table 4.18-7. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- $458,189,100	- $390,949,300	- 8,831 (Direct) - 1,496 (Indirect) - 10,327 (Total)	- 20,144
Percent	- 1.38 (Annual Sales)	- 1.99	- 2.89	- 2.11

The total annual loss in volume from direct and secondary sales in the ROI represents an estimated -1.38 percent change in total sales volume from the current sales volume of $33.18 billion within the ROI. State tax revenues would decrease by approximately $18.32 million as a result of the loss in revenue from sales reductions. Some counties within the ROI supplement the state sales tax of 4 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by 1.99 percent. While 8,000 Army Soldier and government civilian positions would be lost within the ROI, EIFS estimates another 831 military contract service jobs would be lost, and an additional 1,496 job losses would occur indirectly as a result of reduced demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 10,327 jobs, or a -2.89 percent change in regional non-farm employment. The total number of employed positions (non-farm) in the ROI is estimated to be 357,035. A significant population reduction of 2.11 percent within the ROI is anticipated as a result of this alternative. Of the approximately 953,000 people (including those residing on Schofield Barracks) that live within the ROI, 20,144 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes civilian and military employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.18-8 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.18-8. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- $365,808,847 (Local) - $529,922,482 (State)	- $406,640,553	- 9,037 (Direct) -1,152 (Indirect) - 10,189 (Total)
Percent	- 1.10 (Total Regional)	- 2.07	- 2.85

The total annual loss of direct and indirect sales in the ROI represents an estimated -1.10 percent change sales volume according to the RECONS model, an impact that is 0.28 percentage point less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately $21.2 million as a result of the loss in revenue from sales reductions, which would be $2.88 million more in lost state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to decrease by 2.07 percent, slightly more than the 1.99 percent reduction projected by EIFS. While 8,000 Army Soldier and government civilian positions would be lost within the ROI as a direct result of the implementation of Alternative 1, RECONS estimates another 1,037 military contract and service jobs would be lost, and an additional 1,152 job losses would occur indirectly as a result of reduced demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the

ROI is projected to lead to a loss of 10,189 jobs, or a -2.85 percent change in regional non-farm employment, which would be 0.04 percentage points less than projected by the EIFS model.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 1 would lead to a net reduction of economic activity within the ROI of roughly the same order of magnitude.

Housing. Force reduction (up to 8,000 Soldiers and Army civilians) would not significantly impact the RCI program. With over 1,000 Families on the wait list and over 9,000 Families residing off post, occupancy of the on-post Family housing inventory would be maintained. RCI also maintains a waterfall priority for assignment to Family housing. If there are not any Soldiers with dependents on the waiting list, they will open up eligibility to other service members assigned to other installations, retirees, and DoD civilians. This option would impact the local housing market by the potential opening of up to 8,000 rentals and home purchases. The total number of households in Hawai'i is 437,976 (2011) with 183,562 (41.9 percent) being renter households. Alternative 1 would have a beneficial impact on renters but a negative impact on landlords in the ROI.

Schools. The loss of 8,000 Soldiers would lower school enrollment. This would result in the need for fewer teachers, staff, and administrators. In addition, some civilian jobs on installations would be in jeopardy. Major impacts on extracurricular activities would occur with less students. School closures could become a reality, the CYSS programs would suffer major losses, and off-post private schools would experience impacts. Facility and staff adjustments would have to be made to avoid significant negative impacts.

Public Health and Safety. As a result of the implementation of Alternative 1, resident and daytime population levels at USAG-HI would likely decrease and could potentially reduce demand on law enforcement, fire and emergency service providers, and medical care providers on and off post. Remaining Soldiers and their Family members would continue to need these services. USAG-HI anticipates a beneficial impact due to this alternative unless the reduction of Soldiers included military police and/or medical care providers which would reduce the number of Soldiers able to provide those specialized services for the remaining community members. In that scenario, the impact would be negative, but less than significant.

Environmental Justice. As a result of the implementation of Alternative 1, USAG-HI does not anticipate that a disproportionate adverse impact to minorities, economically disadvantaged populations or children would occur in the ROI. USAG-HI anticipates that job loss would be felt across economic sectors at all income levels and spread geographically throughout the ROI.

Alternative 2: Installation gain of up to 1,500 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Economic Impacts. Alternative 2 would result in the increase of up to 1,500 Soldiers, each with an average annual income of $41,830. In addition, this alternative would affect an estimated 837 spouses and 1,440 dependent children, for a total estimated potential impact to 2,277 dependents. The total population of Soldiers and their dependents gained as a result of Alternative 2 is estimated to be 3,777.

Based on the EIFS analysis, there would be no significant impacts for sales volume, income, employment, or population. The range of values that would represent a significant economic impact in accordance with the EIFS model are presented in Table 4.18-9. Table 4.18-10 presents the projected economic impacts to the region for Alternative 2 as assessed by the Army's EIFS model.

Table 4.18-9. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 2

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	11.96	10.83	3.64	3.50
Economic Contraction Significance Value	- 4.16	- 4.04	- 1.78	- 0.94
Forecast Value	0.26	0.37	0.68	0.38

Table 4.18-10. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	$85,910,160	$73,302,990	2,156 (Direct) 280 (Indirect) 2,436 (Total)	3,777
Percent	0.26 (Annual Sales)	0.37	0.68	0.38

The total annual gain in direct and indirect sales in the ROI represents an estimated 0.26 percent change in the total sales volume of $33.18 billion within the ROI. It is estimated that state tax revenues would increase by approximately $3.4 million as a result of the gain in revenue from sales increases. Some counties within the ROI supplement the state sales tax of 4 percent by varying percentages, and these additional local tax revenues would be gained at the county and local level. Regional income would increase by 0.37 percent. While 1,500 Soldiers would be gained within the ROI, EIFS estimates another 656 military contract service jobs would be gained, and an additional 280 jobs gained as a result of increased demand for goods and services in the ROI. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 2,436 jobs, or a 0.68 percent change in regional employment. The total number of employed positions (non-farming) within the ROI is estimated to be 357,035. A population increase of 0.38 percent within the ROI is anticipated as a result of this alternative. Of the approximately 990,000 people (including those residing on Schofield Barracks) that live within the ROI, 3,777 military employees and their dependents would begin to reside in the area following the implementation of Alternative 2. This would lead to an increase in demand for housing, and decreased housing availability in the region. This could lead to a slight increase in median home values. It should be noted that this estimate of population increase includes civilian and military employees and their dependents.

Table 4.18-11 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 2.

Table 4.18-11. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Rational Threshold Value	Sales Volume	Income	Employment
Total	$68,589,159 (Local) $99,360,465 (State)	$76,245,103	2,194 (Direct) 216 (Indirect) 2,411 (Total)
Percent	0.20 (Total Regional)	0.39	0.68

The total annual gain from direct and indirect sales in the region represents an estimated 0.20 percent change in total regional sales volume according to the RECONS model, an impact that is 0.06 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would increase by approximately $4 million as a result of the gain in revenue from sales reductions, which would be $600,000 more in additional state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to increase by 0.39 percent, slightly more than the 0.37 percent increase projected by EIFS. While 1,500 direct Soldiers would be gained within the ROI, RECONS estimates another 694 military contract and service jobs would be gained, and an additional 216 jobs would be created indirectly from increases in demand for goods and services in the ROI as a result of force increase. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 2,411 jobs, or a 0.68 percent change in regional non-farm employment, which would be equivalent to the employment increase projected by the EIFS model.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 2 would lead to a net increase of economic activity within the ROI. The beneficial impacts anticipated are roughly the same order of magnitude.

Housing. Any increase in housing requirements would have to be satisfied by the local economy until MILCON could support the building of additional Unaccompanied Personnel Housing/barracks for single Soldiers. The local economy would also be the source of housing for accompanied Soldiers until a new HMA to determine if additional on-post Family housing is required. Alternative 2 would have a significant effect on the rental market.

Schools. An additional 1,500 Soldiers and their Family members would cause more overcrowding in schools; bus transportation would be inadequate; classes would be larger; a need for more teachers and staff would occur; more cafeteria space would arise; the need for a new school facility becomes more imminent; more services from mental health personnel, nurses, monitors etc. would emerge; and a definite rise in safety concerns would need to be addressed. Alternative 2 would have a significant but mitigable impact if negotiations with the Hawai'i Department of Education to build a new elementary school on Schofield Barracks were to be successful.

Public Health and Safety. As a result of the implementation of Alternative 2, resident and daytime population levels on USAG-HI would increase and would subsequently increase the demand on law enforcement, fire and emergency service providers, and medical care providers on and off post. USAG-HI anticipates a significant impact as a result of Alternative 2. This increase in personnel would likely lead to greater traffic congestion, parking congestion, and an increase in crime given a higher residential and daytime population on post. This could be mitigated by a proportional increase in service providers and related facilities.

Environmental Justice. As a result of the implementation of Alternative 2, USAG-HI does not anticipate that a disproportionate adverse impact to minorities, economically disadvantaged populations or children would occur in the ROI.

4.18.12 Energy Demand and Generation

4.18.12.1 Affected Environment

Electrical power to O'ahu is supplied from the Hawaiian Electric and Light Company (HECO). Power supplies are described as adequate for both locations. Both of the islands are self-sufficient and provide an independent electrical generation supply (i.e., do not import or export

power to other islands). Increases in population and tourism have resulted in an escalating demand for each island's existing power supply. To meet rising demand and future demands HECO has added more than 100 MW of power generation in the last 3 years. In addition, multiple renewable energy projects have added additional capacity on O'ahu.

Schofield Barracks is presently serviced by two substations, Castner and Menoher substations, that support the distribution of power across the installation; both are provided energy from HECO 46 kV circuits. One of these lines presently runs through the South Range. The USAG-HI continues efforts to reduce power demand by implementing energy conservation methods, including promoting the use of energy efficient lighting, buildings, and examining new sources of renewable energy production to meet the installations energy requirements. Within the housing areas, IPC has installed nearly 1,200 PV systems with a installed capacity of approximately 5.2 MW.

PTA's electrical energy is provided by the HELCO from a HELCO-owned substation located outside the northeast fence of the cantonment area to the main base substation. At the substation, the 69-kV transmission voltage is transformed down to the 12.47-kV primary distribution voltage through a radial distribution system feeding the remainder of the installation, using a 2,500-kVA transformer. The base owns, operates, and maintains the distribution network beyond the substation; the components of this system include metering equipment, 29 transformers, 20 miles of overhead lines, and 755 poles. PTA's current electricity usage is approximately 1,718,400 kWh per year, and electricity consumption has increased steadily in recent years.

Although alternative sources of energy, such as using photo-voltaic cells to power the lights on the Bradshaw Army Airfield airstrip, have been tried at PTA to reduce overall energy usage, these systems have not yet been successful at PTA. PTA was nominated by Army officials in 2010 to be a prototype installation for a net zero energy assessment and planning. As part of this process, a study was conducted by the National Renewable Energy Laboratory to evaluate the potential for increasing energy efficiency and increasing the use of renewable sources of energy. While not ultimately selected as the prototype installation, the Army is using the information gained by conducting the National Renewable Energy Laboratory study to seek energy and environmental sustainability opportunities at PTA for both range and cantonment areas, including waste to energy projects, renewable energy, water conservation, waste minimization and management.

PTA was also recently awarded funding under the American Recovery and Reinvestment Act for the installation of two additional solar systems. The likely locations for the systems are on the HQ building and the fire station.

4.18.12.2 Environmental Consequences

No Action Alternative

This alternative would result in negligible effects to existing energy demand and utilization by USAG-HI. USAG-HI would continue to look for ways to reduce energy use and increase energy efficiency under the No Action Alternative. Energy demand through the use of Army facilities would continue and not change from existing levels. As the energy demands for O'ahu and PTA cantonment and training ranges is currently adequate, impacts from their use at present levels would be less than significant.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Long-term beneficial impacts to the power generation system would result from the proposed force reduction because there would be less strain and wear to the system. Decreases

associated with demand on the power plant, energy distribution lines, and infrastructure would result. The overall influence of the force reduction is anticipated to result in a decrease of regional power demand. Less energy resources, including coal and fuel, would be consumed.

Alternative 2: Installation gain of up to 1,500 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

USAG-HI would experience minor impacts from the additional Soldiers and Family members. The installation's current energy infrastructure would be able to accommodate the addition of 1,500 Soldiers and their Family members. An increase in population associated with a stationing scenario would increase demand on the power plant, energy distribution lines, and infrastructure. The increase in Army Soldiers and Families is anticipated to increase power demand in the region, but additional power supply is being generated by HECO to accommodate regional population growth. There may be additional long-term energy demand in training areas; however, demand is anticipated to be slight and inconsequential compared to system capacity.

Maneuver training would increase as a result of this alternative; however, impacts to energy use and costs are anticipated to be minor. During maneuver training units power generation is typically self-contained (generators) and does not tap into existing power infrastructure. Overall increase in demand is anticipated to have minor impacts within USAG-HI.

4.18.13 Land Use Conflict and Compatibility

4.18.13.1 Affected Environment

Although federal land uses are not subject to state and County regulation, this section identifies possible conflicts between the Proposed Action and other federal, regional, state and local land use plans, policies and controls (40 CFR Part 1502.16(c)). The descriptions of existing land uses in this section use the State Land Use District designations: Conservation, Agriculture, Urban, or Rural. Conservation District Subzone designations, regulated by Hawai'i Department of Land and Natural Resources, are Protective, Limited, Resource, General, and Special. The state designations for Agricultural Lands of Importance to the State of Hawai`i categorize agricultural land as Prime, Unique, or other. In addition, this section also uses the Army classifications.

A range of recreational activities is available on lands within the ROI including surfing, hunting, fishing, mountain biking, and visiting national monuments. Additional recreational opportunities are available on some of the lands adjacent to or near the Army installations. Existing land uses and recreational opportunities are summarized in the following subsections for each of the Army installations within the ROI and surrounding lands.

Soldier and Family housing and other support facilities are located (or planned) at SBMR and South Range, SBER, and Wheeler Army Airfield; no Soldiers are permanently stationed at KTA, DMR, or KLOA. The garrison currently has plans for upgrading and constructing facilities and infrastructure at SBMR and KTA; and constructing or renovating runways or roadways at Wheeler Army Airfield.

SBMR has 9,880 acres of land (fee simple, leased, and ceded), and has a cantonment area, conservation land, training ranges, an impact area, supply and storage, and outdoor recreational facilities (limited hiking, skeet shooting, and archery). Lands there are classified as agricultural, state-designated urban, and the installation has conservation districts. Land uses surrounding SBMR are urban, forest, military, and agricultural. Westward of the main post lies the Wainae Kai Forest Reserve. To the east of SBMR is the Town of Wahiawa (and reservoir). Wheeler Army Airfield lies to the southeast of the main post. North of SBMR is the Kaala

Natural Area Reserve. To the south lies South Range, the former Honouliuli Preserve, which is now a state forest reserve, Military Field Station Kunia, and the Naval Magazine Pearl Harbor Lualualei Branch.

South Range consists of 1,402 acres and includes a range for small-arms live-fire qualification as well as lands set aside for an infantry brigade complex and motor pool. The land there includes parcels within the Conservation District Resource Subzone and 100 acres of Forest Reserve land. Recreational hiking occurs there. Schofield Barracks is located to the north of South Range; the former Honouliuli Preserve to the west; and Field Station Kunia and Wheeler Army Airfield is located to the east. Some agricultural land to the south of SBMR has been converted to support training and cantonment area construction in the last few years.

Wheeler Army Airfield has 1,369 acres and provides for housing and administration (provided at both Wheeler and SBMR), maintenance, and training and flight facilities. Parts of Wheeler Army Airfield have been designated agricultural and urban districts. The installation allows no hiking or hunting there.

The garrison's SBER facility is comprised of 5,154 acres of fee simple, leased, and ceded lands; and provides training and education, warehouses and storage, maintenance, and the U.S. Army Non-Commissioned Officers Academy. The training areas there are within the state-designated Conservation District Resource and Protective Subzones. The installation training area's western portion is adequate for a variety of training purposes; however, no live-fire activities occur there.

KTA consists of 9,480 acres of training areas parachute drop zones, and helicopter landing zones. The northern portion of KTA supports all tactical maneuver training, pyrotechnics, air support training, and including jungle warfare. Some of the lands there are within state-designated Conservation District Resource Subzone and much of the rest lie within the agricultural district. Recreational uses include public hunting and hiking administered by the State of Hawai'i in area A-3 and motocross in area A1. Located to the south and southwest of KTA is KLOA; agricultural land and forest to the southeast; Pupukea Paumalu Homesteads, Camp Paumalu, and the Pupukea Paumalu Forest Reserve to the west; and agricultural land, rural communities, and park lands to the northwest.

Access to KTA may be affected by additional fencing and signs restricting access, which are necessary due to the proposed live-fire use of the area. Short Range Training Ammunition has a maximum range of approximately 2,300 feet and an effective range of approximately 246 feet. When the range is in use, any traffic (on foot or in unprotected vehicles) within the surface danger zone would be prohibited. Presently, traffic (such as unauthorized public access) is not strictly controlled at KTA. Access to training lands would be restricted during fires and when surface danger zones are active.

KLOA has 23,348 acres of land that is used mostly for helicopter training, with only limited maneuver, mountain and jungle warfare, and small unit infantry maneuver training. Approximately only 5,310 acres of the training area is adequate for maneuver training; and lease agreements promote conservation of resources by prohibiting the use of live-fire, incendiary devices, tracer ammunition, explosives use, and pyrotechnics throughout the training area. KLOA is also included in the state-designated Conservation District Resource and Protective Subzones. KLOA is bordered by SBER to the south and Ahupuaa Kahana State Park to the southeast; private lands, Sacred Falls State Park and Hauula Forest Reserve to the east; private agricultural lands to the west; and the Helemano Military Reservation in the southwest.

DMR has 664 acres and includes an airfield (used primarily by private aircraft), bunkers, and earthen airplane hangars; approximately 354 acres suitable for maneuver and field training; 107 acres are developed within the cantonment area; and the remaining lands are located on steep slopes of the Waianae Mountains. Most of DMR is within the state-designated Agricultural District but is not used for agriculture. The airfield portion of DMR is within the Special Management Area (SMA). SMAs are lands within the shoreline setback, which is currently 40 feet from the shoreline, although some setback boundaries extend farther inland. SMAs are designated for more intensive management, and actions within the SMA may require an SMA use permit from the local planning commissions. DMR supports no live-fire activities and has no designated impact areas or associated surface danger zones. Ammunition is restricted to the use of blanks, and non-aerial smoke is allowed in designated areas. Public recreational uses at DMR include hunting, glider plane operation, parachuting, sky diving, hang gliding, and hiking. The land surrounding DMR is generally undeveloped and includes state-designated Prime agricultural land to the east, beaches to the north, and some residences to the northeast. Land south of DMR is mountainous and includes a state hunting area to the southwest. Land uses to the west include an inactive quarry, the YMCA's Camp Erdman, and the military's Camp Kaena. The Pacific Ocean is to the north.

PTA occupies approximately 132,000 acres, or 5 percent of the Island of Hawai'i's approximately 2.5 million acres. PTA is located in the north-central portion of the island, just to the west of the plateau formed by Mauna Loa and Mauna Kea volcanoes. Access to PTA is from Saddle Road, which connects the towns of Hilo to the east and Waimea to the north. Land uses at PTA include the cantonment area, Bradshaw Army Airfield, maneuver training areas, drop zones, live-fire training ranges, artillery firing points, an ordnance impact area, and areas unsuitable for maneuver activities.

Recreational opportunities at PTA are strictly limited to archery and bird-shot hunting in designated training areas with special permission from range control. In addition, an annual motocross race is held on Hawai'i Island that transits a small portion of Training Area 2. A portion of the installation is made available for public hunting, in accordance with terms of the lease with the state (1964). Regularly scheduled hunting at PTA helps to control feral animal populations (for sheep and goats) and enhances Army community relations.

4.18.13.2 Environmental Consequences

No Action Alternative

If this alternative were selected, no changes to land use conditions would occur. The use of Army lands would continue as they are currently designed and authorized. No changes or additions to Army lands would occur; therefore, impacts to surrounding land uses would remain less than significant. Continued coordination with the public and implementation of regulatory and administrative mitigation measures would reduce land use conflicts.

Maneuvers and live-fire training would prevent access to Army training areas by the public during training events. The Army would continue to restrict access to training areas during maneuver training to ensure there are no safety risks to the public from training or UXO. USAG-HI would coordinate with the State of Hawai'i and the public to permit access to areas when feasible.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Beneficial impacts to land use would be anticipated to occur through implementation of this alternative at USAG-HI. A reduction in training land use would be anticipated that roughly correlates with the number of Soldiers inactivated or realigned as a result of this alternative in comparison to those remaining at USAG-HI. The loss of 8,000 Soldiers would decrease use of

existing training land and training facilities by approximately up to 30 percent. This scenario would involve the demolition of some facilities and construction of new facilities within the existing cantonment area. Beneficial land use impacts from construction and deconstruction at USAG-HI are anticipated. No new range construction would occur as a result of the implementation of Alternative 1. In addition, none of the current ranges would be expanded as described for the action alternatives. Implementation of the USAG-HI institutional programs, associated land management practices and coordination among Army, federal, state, and local land managers would continue; however, a reduction in live-fire and maneuver training may beneficially increase opportunities for recreational, cultural, and public access.

Alternative 2: Installation gain of up to 1,500 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be minor impacts, from land use conflicts and compatibility anticipated as a result of the implementation of this alternative at O'ahu and at PTA. Additional Soldiers would require the additional use of training areas and qualification ranges.

Training Infrastructure Construction. Range expansion and construction projects could occur either in the footprint of existing ranges, or in areas nearby current ranges. Siting of new ranges or expansion of existing maneuver areas would involve minimizing conflicts with existing land uses, however, at this time there is no known requirement for additional ranges associated with the stationing of up to 1,500 additional Soldiers Future ranges, if required, would be subject to additional site-specific NEPA analysis.

Live-Fire Training. No new weapon systems would be introduced as a result of this scenario. Live-fire activities would increase in frequency at USAG-HI. No changes to land use designations within existing ranges or impact areas are anticipated. Increased noise, dust, or other indirect effects associated with these stationing scenarios are not anticipated to affect off-post land uses. Conflicts with some recreational activities such as hunting could occur due to an increase in restrictions during training activities. Schools and residential areas surrounding SBMR would experience increased less compatible noise impacts.

Maneuver Training. Due to increased training, more limitations may be occur with regard to public access of open use and recreational areas. Impacts associated with public access closures are anticipated to be minor because alternate areas at these training areas would still be available for recreational and subsistence activities.

Overall, Alternative 2 would result in only minor impacts to land use on USAG-HI sites and at PTA.

4.18.14 Hazardous Materials and Hazardous Waste

4.18.14.1 Affected Environment

The ROI for hazardous materials and wastes is the area on and surrounding the potentially affected Army installations. Because fences or mountain ranges cannot always confine or reduce impacts from spills or releases of hazardous materials or wastes, areas immediately adjacent to these project locations are considered part of the ROI.

Specific regulations generally govern the use, storage, and disposal of hazardous materials and wastes. The U.S. Army Pamphlet 200-1 governs all aspects of managing hazardous materials and regulated waste by military or civilian personnel and on-post tenants and contractors at all Army facilities. The Army maintains site-specific SPCC Plans and pollution prevention plans that regulate the storage and use of petroleum products and hazardous materials, respectively. Hazardous material and waste management continues to follow Army, federal, and state regulations in order to minimize potential impacts to human health or the environment.

According to the CERCLA, a hazardous substance can be defined as any substance that, due to its quantity, concentration, or physical and chemical characteristics, poses a potential hazard to human health and safety or to the environment. CERCLA has created national policies and procedures to identify and remediate sites contaminated by hazardous substances.

The following specific hazardous materials and wastes are addressed:

- Ammunition, live-fire, and UXO;
- POLs and storage tanks;
- Contaminated and Installation Restoration Program sites;
- Lead;
- Asbestos;
- PCBs;
- Pesticides and herbicides;
- Radon; and
- Hazardous wastes.

The Army maintains updated MSDSs for all hazardous materials used. The hazardous materials and wastes used and generated within the ROI in Hawai'i are summarized in the following subsections.

***Ammunition, Live-Fire, and Unexploded Ordnance*.** Live-fire training associated with this scenario could include spent cartridges, shell casings, and munitions, including the generation of dud and UXO; and creates explosive (and propellants) residue; which, for SBMR and South Range (the only live-fire areas on O'ahu), are stored at satellite hazardous waste storage facilities. Each training area is restricted from public access and maintains surface danger zones that establish the limits to which Soldiers or range operators may approach detonation points during training. SBMR's surface danger zones exist roughly within an arc formed by Area X (the eastern boundary), Trimble Road (the southern boundary), and the Waianae Mountain Range (the western boundary). The direction of fire is generally west to north. The area supports small arms, mortar, and artillery training. No live tube-launched, optically tracked, wire-guided missile, air-to-ground, or ground-to-air firing is conducted at the SBMR ranges (Belt Collins, 1993). In recent years, there have been no problems involving the public and the storage, transportation, and use of ammunition for training at SBMR (USAG-HI, 2004). Unused ammunition is turned back into the ammunition storage point for later use.

There are no live-fire areas at Wheeler Army Airfield; however, the airfield has an ammunition storage point with an established explosive safety quantity-distance arc. The safety arc around the ammunition storage point is in the south-central portion of the installation. Explosives quantity distance regulations (TM 9-1300-206) are imposed on ammunition storage facilities for the safety of personnel and supplies. All explosives and ammunition are stored within the ASP on Wheeler Army Airfield under the supervision of the U.S. Army Support Command, Hawai`i Directorate of Logistics. During 8 or 9 months of the year, ammunition is brought from Wheeler Army Airfield or Lualualei to PTA via boat or helicopter (USAG-HI, 2004). If boats are used, the ammunition is driven from Kawaihae Harbor to PTA. There have been no accidents involving the transport of ammunition in the last 5 years.

In addition, non-live-fire training occurs on SBER, South Range, DMR, KTA, and KLOA. Exercises at SBER use pyrotechnics and blank ammunition, and no LFX occur at SBER; therefore, no surface danger zones exist because the range is used for bivouac, maneuver, and dummy fire training activities.

Results from recent soil sampling of SBMR ranges produced some samples with levels above EPA Region IX residential and industrial Preliminary Remediation Goals (PRGs). At SBMR, two samples for Royal Demolition eXplosive (RDX) and one sample for nitroglycerin slightly exceeded the industrial PRG, but the level of exposure on a range (days or weeks) compared with the level of exposure used to calculate an industrial PRG (25 years) minimizes the concern. Although metals, such as aluminum and iron, occur naturally in Hawaiian soils, byproducts of munitions, such as lead and Royal Demolition eXplosive, contribute contaminants that could create health and safety concerns in the natural environment. Hazardous waste is transferred to the SBMR transfer and accumulation point facilities, as appropriate, for proper storage until disposal contractors and the DRMO coordinate to ensure proper disposal.

DoD 6055.9 Standard defines UXO as "explosive ordnance that has been primed, fused, armed, or otherwise prepared for action, and that has been fired, dropped, launched, projected, or placed in such a manner as to constituted a hazard to operations, installations, personnel, or material and remains unexploded either by malfunction or design or for any other cause." Grenades, mortars, and artillery weapons used in live-fire training can produce UXO; all other ammunition is inert. When a live-fire training range is closed, all UXO is normally destroyed where it is found. No known dud rounds are left in place at the conclusion of a training exercise.

UXO is suspected in various training areas and presents a potential threat to Army personnel. UXO is not cleared before maneuvers commence because there is a low level of suspected UXO. Soldiers are taught how to identify UXO and how to handle it properly.

Petroleum, Oils, Lubricants, and Storage Tanks. POLs include engine fuels (gasoline, diesel, and jet fuel), motor oils and lubricants, and diesel and kerosene heating fuels. Vehicle and heating fuels include a mixture of aliphatic hydrocarbons and such aromatic organic compounds as benzene, toluene, ethyl benzene, and xylene. CERCLA definitions of hazardous substances (42 USC 9601[14]) and pollutants exclude petroleum unless specifically listed. The EPA interprets petroleum to include hazardous substances found naturally in crude oil and crude oil fractions, such as benzene, and hazardous substances normally added to crude oil during refining. Petroleum additives or contaminants that increase in concentration in petroleum during use are not excluded from CERCLA regulations.

Most industrial operations for the Army installations in Hawai'i use the "Super Station" centralized motor pool southwest of Lyman Road at Building 2805 on SBMR. All fuel for industrial use is transported from the Hickam Air Force Base Fuel Farm via Tesoro and stored in ASTs at the Super Station (USAG-HI, 2004). Two AAFES retail filling stations are located on SBMR at buildings 80 and 1167. Each distributes different grades of unleaded gasoline, with diesel fuel also sold at the first station.

Both USTs and ASTs are used to store petroleum products and fuels at locations throughout the project area. POL storage is summarized in the following paragraphs by location, including USTs, ASTs, and oil-water separators.

Underground Storage Tanks. There are a number of in-use and permanently out-of-use USTs at SBMR and Wheeler Army Airfield. USTs at DMR and KTA are no longer in use.

The bulk storage facility at PTA was constructed in 1982 and is located at Building 343 with eight USTs. POL containers belonging to the bulk fuel facility are stored on a concrete pad with secondary containment. One UST at PTA is included on the Leaking UST list maintained by DPW. This tank was located at the dining facility in Building T-186 and was removed in May 1994. This site has been remediated, and the EPA issued a clean closure status in December 2001. In addition, two Installation Restoration Program sites exist at PTA. Both sites are landfills located in the southern portion of the main post.

Aboveground Storage Tanks. There are 18 motor pools at SBMR. Some motor pools use ASTs to store diesel fuel or used oil in conjunction with vehicle maintenance. All fuel for industrial use is transported from the Hickam Air Force Base Fuel Farm via Tesoro and stored in four ASTs at the Super Station (USAG-HI, 2004). Additionally, ASTs are used by many buildings on base to store liquid petroleum gas, also known as propane, to fuel hot water heaters.

Several ASTs on Wheeler Army Airfield in the area of the aircraft runway contain diesel or aviation gas. Emergency generators can be found throughout SBMR, SBER, and Wheeler Army Airfield. Many of these units contain integrated tanks to store fuel as opposed to being connected to separate ASTs. A list of these units is maintained by the DPW (USAG-HI, 2004). There are no known ASTs on DMR. There is one AST at KTA that is used to store diesel fuel and supports an emergency generator.

Oil-Water Separators, Wash Racks, and Grease Traps. Oil/water separators separate oil, fuel, and grease from water by gravity because these substances have a specific gravity that is lower than that of water (i.e., gasoline floats on water). Oil/water separators can create environmental issues similar to those associated with USTs. Oils are skimmed from the surface of these oil/water separators or USTs and recycled or disposed of; sediments are removed every six months or more frequently, if needed, by a service contractor. The DPW maintains a list of all oil/water separators, grease traps, and wash racks on SBMR and these facilities are inspected regularly. There are no known oil/water separators on DMR, or KTA.

Installation Restoration Program Sites. There are several sites identified on SBMR and Wheeler Army Airfield. No sites are identified at KTA. Explosive compounds have been found in surface soil and water samples at SBMR, as have metals, including iron, lead, antimony, and aluminum, and semi-VOCs. Trichloroethylene had previously been discovered in four wells supplying potable water to SBMR. The concentration of trichloroethylene exceeded regulatory limits and thus SBMR was placed on the EPA's National Priorities List; however, the site has since been remediated and was removed from National Priorities List in 2000.

The last fully recorded surface soil investigation (to establish baseline conditions for human health assessments for range exposure) was conducted by the USACE between November 8 and November 10, 2002; and covered the following areas: SBMR, KTA, KLOA, and DMR. Soil samples were taken during this time from a variety of locations across the garrison. The USACE compared soil constituent concentrations with EPA PRGs for industrial soils with the goal of identifying current soil conditions and to determine if these conditions are consistent with acceptable exposure rates. It was noted that most personnel use the training ranges in Hawai`i for only brief periods of time, totaling approximately days or weeks (over the course of one year); therefore, it is assumed that exposures to potential contaminants there are far lower than what would be assumed in the industrial soil PRGs. The study revealed that three classes of materials were generally present as soil constituents; these were metals, explosives, and semi-VOCs.

Depleted Uranium was found in August 2005 during the cleanup of UXO from a range located on SBMR and at PTA. Follow-up surveys identified other locations where Depleted Uranium was found. The source of this Depleted Uranium was determined to be tail fin sections of Spotting Rounds for the Davy Crockett Weapons System. The Army is continuing to work with the State of Hawai`i to fully investigate this issue. This action would not involve any use of Depleted Uranium ammunition. The action would not increase exposure to existing depleted uranium. Some Depleted Uranium is being cleaned up and the Army is applying for a permit for the Depleted Uranium on its ranges.

Lead. Lead sources include LBPs and lead from ordnance and ammunition. Lead was a major ingredient in house paint used throughout the country for many years. LBP is defined as any paint or surface coating that contains more than 0.5 percent lead by weight. Buildings constructed before 1978 are considered to be a risk for LBP. LBP is a hazard because it can slough off as dust or chips that children can easily inhale or ingest.

The Army environmental program maintains a database of lead surveys. The most recent version of the lead survey database for SBMR, Wheeler Army Airfield, KTA, and DMR is available through the Army DPW. As of 2005, structures on PTA have not been surveyed for lead.

Lead is also used in manufacturing ordnance/ammunition, such as that used for small arms training. The Army recognizes the potential health threats associated with lead. The Army document, "Prevention of Lead Migration and Erosion from Small Arms Ranges" (USAEC, 1998) provides management practices to minimize adverse impacts on human health and the environment from small arms ranges. The Army implements general cleanup procedures following training events to remove shell casings and other munitions residue from the ranges, and EOD specialists destroy all UXO.

Asbestos. Upon identification of renovation or demolition projects all buildings are surveyed for asbestos-containing material.

PCBs. PCBs may be found in the cooling fluid of electrical equipment, including transformers and capacitors, particularly if such equipment was manufactured before the early 1970s. PCBs are also found in fire retardants and other solid materials. The Army is committed to removing or retrofilling all electrical equipment containing regulated amounts of dielectric fluid containing PCBs.

A survey was conducted in 1991 to determine the concentration of PCBs in the electrical distribution equipment on military installations in Hawai'i. The survey results indicated that there were PCB-containing transformers and electrical equipment throughout SBMR and in a few transformers at DMR and KTA. PCB concentrations in soil samples from PTA were below the listed PRG. Devices that were found to contain regulated levels of PCB have been either removed and upgraded with non-PCB devices, or were retrofilled or removed, drained, packaged, and disposed of in accordance with 40 CFR Part 761 (PRC Environmental Management, Inc., 1995).

A preliminary assessment and site inspection of four potential contaminant sources (a former pesticide storage area, a fire training area, and two landfills) within the boundaries of PTA was conducted in March and April 1993. The analytical results for soil sampling in these areas indicated that PCB concentrations were all below the listed PRG. Devices that were found to contain regulated levels of PCBs have been either removed and upgraded with non-PCB devices, or were retrofilled or removed, drained, packaged, and disposed of in accordance with 40 CFR Part 761. No PCB-containing transformers remain at PTA.

Pesticides and Herbicides. These materials are commonly used throughout the U.S. Army at USAG-HI installations to prevent and mitigate pest-related health problems and maintain grounds and structures. These materials are currently stored in approved containers.

Due to the agricultural nature of South Range, there is suspected pesticides persisting within the soils. Further evaluation is pending.

There is one primary pesticide storage location on PTA, the DPW Natural Resources Department (Building T-93). Small volumes of pesticides are stored in plastic lockers, with

closed plastic containers as secondary containment. Larger volumes are stored in plastic containers on secondary containment pallets.

Radon. Radon is naturally occurring in low concentrations in the Hawaiian Islands and has been evaluated in both Honolulu and Hawai`i counties. Though radon has been associated with an increase risk of lung cancer, current samples throughout the Hawaiian Islands are lower than EPS's recommended action level of 4 pCi/L, and thus there is not much concern at this location.

Hazardous Wastes. The primary function of the motor pool facilities on SBMR is vehicle maintenance. Although motor fuels were previously stored and distributed at these motor pools for military vehicles, all fueling for industrial purposes now takes place at the Super Station. Motor pool facilities have designated waste storage/holding areas with secondary containment for wastes generated by shop and vehicle servicing. The waste is separated into hazardous waste such as lithium batteries or RCRA chemicals, and non-regulated waste such as recyclable oil. The hazardous waste is brought to the hazardous waste shop storage point, while the recyclable materials are brought to the Recyclable Material Shop Storage Point (USAG-HI, 2004). Hazardous wastes collected at hazardous waste shop storage points are then transferred to less than 90-day storage point on the installation before being properly disposed of.

Biomedical Waste. The Army follows strict guidelines according to AR 200-1 in the handling, use, and disposal of medical, dental, and veterinary supplies. Most medical waste within the project vicinity is produced and temporarily stored outside of the project area at Tripler Army Medical Center (TAMC). The medical clinics on SBMR and PTA produce small amounts of regulated chemical and medical waste. The medical waste is combined and temporarily stored before being disposed of at a regulated off-base disposal site. Emergency medical training medics accompany units on deployment at KTA and DMR, and biomedical waste is shipped back to SBMR with the units.

4.18.14.2 Environmental Consequences

No Action Alternative

The current uses of the affected environment would not change under the No Action Alternative, other than as discussed as a part of pre-existing trends and the on-going actions discussed below. The production and handling of hazardous materials and hazardous wastes would continue at current levels. The types and quantities of wastes would remain the same, and the existing identification and disposal methods are sufficient to minimize impacts to human health and safety. No impacts would be anticipated from asbestos, LBP, PCBs, pesticides and herbicides, biomedical waste, or radon under the No Action Alternative. There are minimal impacts to human health or safety that would result from the renovation of barracks or completion of other projects. Hazardous materials and wastes would continue to be managed in accordance with existing federal, state, installation-wide hazardous materials management plans, the current Army protocols, and SOPs.

On-going action to address issues related to depleted uranium would continue under the No Action Alternative. The Army would continue to provide information and any necessary training to the State Department of Health in a timely manner and partner with the state in the planning and execution of a survey and monitoring effort and a mutually agreed upon response.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

The production and handling of hazardous materials and hazardous wastes would be reduced due to the reduction in Soldiers utilizing the installation. The types and quantities of wastes would also be reduced, thereby resulting in a beneficial long-term impact. In the short term,

there would be an increase in the demolition of outdated and no longer needed facilities. This would increase the volume of solid waste generated. In addition, an increase in asbestos and LBP disposal would be anticipated until facility reduction is completed as a result of the implementation of Alternative 1. Construction workers and Army personnel would take measures to dispose materials in accordance with regulatory requirements installation management plans. With the implementation of the USAG-HI institutional programs, BMPs and SOPs, impacts are anticipated to be minor.

Live-Fire Training. The number of required live-fire user days per year at USAG-HI would drop below current levels and no new types of weapons are anticipated to be introduced to training areas. Therefore, a reduction in the amounts of ammunition that would be used or in the generation of UXO and lead contamination on training ranges is anticipated. Hazardous materials would be generated through range maintenance activities. Soils contaminated with lead would be properly handled and reused to maintain berms. Hazardous materials and wastes would continue to be managed in accordance with existing federal, state, installation-wide hazardous materials management plans, the current Army protocols, and SOPs.

Maneuver Training. The intensity and frequency of maneuver training at USAG-HI would drop below current levels. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at USAG-HI. Therefore, a reduction in hazardous materials and hazardous wastes from maneuver training is anticipated. There would be less risk of spillage of petroleum products in the training areas on O'ahu and at PTA, resulting in a net beneficial impact.

Overall, there would be a beneficial impact and reduced risk and reduced long-term production of hazardous waste as a result of implementation of Alternative 1.

Alternative 2: Installation gain of up to 1,500 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Less-than-significant impacts from hazardous materials and waste would be anticipated with an increased Soldier strength of up to 1,500 Soldiers and their Families. The storage, use, handling, and disposal of hazardous materials, toxic substances, and hazardous wastes would not increase the risk to human health due to direct exposure, would not increase the risk of environmental contamination, and would not violate applicable federal, state, local, or DoD regulations. Existing management procedures, regulations, plans, and permits would be used to minimize risk.

Garrison Construction and Deconstruction. Construction and demolition of structures within the cantonment area would generate hazardous waste at SBMR and PTA due to the presence of asbestos and LBP in some of the older existing structures. The installation would ensure that any removal and disposal of these materials would be in accordance with established federal, Army, and USAG Alaska policy for handling hazardous materials and hazardous wastes. New construction would involve the testing, recordation, and mitigation (if necessary) for radon.

The requirement for motorpools would be coupled as hazardous materials collection sites for POLs as a result of the implementation of Alternative 2. The additional tactical and fleet vehicles may require additional ASTs and USTs, wash racks, and thus oil-water separators. Similar effects would occur at Wheeler Army Airfield to accommodate the additional helicopters and equipment associated with the CAB. Pesticides that may exist in soils at South Range could adversely affect nearby waterbodies during construction due to stormwater runoff. Implementation of BMPs and mitigations to minimize runoff from construction sites would be required.

For housing, child development centers, and other community support or recreational facilities, the use of pesticides and herbicides used to control insects, rodents, and plants (such as poison ivy) may pose long-term minor effects (because direct exposure to these materials is unlikely) and because the use and storage of these materials would likely be limited, and its application would be compliant with all relevant regulations. Additional short-term and long-term effects could occur from an increase in construction equipment (short term) and Soldier fleet vehicles and POVs (long-term). More vehicles would increase the potential for spills or releases of hazardous materials to the environment. Additionally, the amount of recyclable waste (from petroleum products) would increase throughout the garrison.

The increase in Soldiers from all of these stationing scenarios would result in an increased generation of biomedical wastes from dental and medical facilities on post at SBMR and TAMC. These wastes would be processed in accordance with current SOPs and regulations. Because the installation is already considered a Large Quantity Generator no additional permitting or significant actions are likely to be required.

Training Infrastructure Construction. Short-term effects would occur from the upgrade of existing ranges and the construction of new ranges to accommodate growth. These ranges might be built on areas that have been previously used and could contain lead and other materials from spent ammunition. Potentially contaminated soils that would need to be removed from ranges would be treated at an off-post facility. Additionally, construction equipment and worker vehicles operating in the range areas could cause spills of hazardous materials (POL) during the construction phase; however, in accordance with USAG-HI policy, all spills are to be cleaned up immediately and proper reporting requirements followed. The need for additional ranges or upgrade of current ranges is not known. These projects would be the subject of additional, site-specific NEPA analysis.

Live-Fire Training. This scenario would increase the frequency of Soldier live-fire training by approximately 10 percent in USAG-HI, thus increasing the amount of lead bullets and other munitions expended in the range area. Live-fire small arms ranges would retain their berms to stop projectiles fired at the ranges. Although more lead would be fired into impact berms, the installation has mitigation measures in place to ensure berms are well maintained and re-graded as needed to prevent erosion. At PTA, it is not known if the increased training would exceed historically authorized levels. If this were the case, additional NEPA analysis would be required.

No new weapon types would be introduced to USAG-HI training areas. Handling and storage methods, disposal protocols, and safety procedures would continue to be conducted in accordance with existing regulations.

Maneuver Training. Maneuver training associated with this scenario would continue to be conducted in existing training locations including KTA, KLOA, DMR, SBER, SBMR, South Range, and PTA. Transportation of personnel and use of flammable or combustible materials, such as fuel or ordnance (i.e., weaponry or equipment), could increase the potential for spills or releases of hazardous materials, especially in areas not previously used frequently. BMPs would be practiced at each of these proposed facilities, and project area personnel would follow EPA and USAG-HI protocol for using and handling hazardous materials, such as POLs. Each facility maintains strict SOPs and spill contingency plans for hazardous materials and waste, identifying specific operating responsibilities and procedures. SPCC Plans would be updated to reflect changes implemented as a result of stationing scenarios. BMPs would continue to be exercised throughout the garrison. USAG-HI's existing programs, management plans, and regulations that govern handling, use, storage, and disposal of hazardous and non-hazardous materials would remain in place. All spills should be cleaned immediately in accordance with USAG-HI Pamphlet 200-1.

4.18.15 Traffic and Transportation

4.18.15.1 Affected Environment

Traffic on O'ahu extends largely from urban development in southern coastal areas from Ewa on the west of the island to Hawai'i Kai to the east. The Island of O'ahu has four freeways, State Road 78, H-1, H-2, and H-3. State Road 78 (Moanalua Road) functions as a bypass for H-1 (Lunalilo Freeway), which spans the south portion of the island connecting the Ewa area with Hawai'i Kai. H-2 connects the Ewa area with the central portion of the island (where Schofield Barracks is located) and connects with H-1 to east of Honolulu. H-3 connects Pearl Harbor with Kaneohe Bay Marine Corps Airfield at the northeast portion of the island. The other state highways make up roughly 200 lane-miles of roadway; and the City and County of Honolulu contain approximately 1,200 lane-miles of roadway.

Very few roads connect the northern and southern portions of O'ahu (separated by the Koolau Mountains); these are Pali Highway, Likelike Highway, and H-3. The Kalanianaole Highway traverses through the east coastline between Hawai'i Kai and Kailua. H-2 and Kamehameha Highway traverses the western portion of the Koolau Range and connects Honolulu with Mililani, Wahiawa, Schofield Barracks, and Haleiwa. The training areas around Schofield Barracks are primarily accessed through the Kamehameha Highway and Kunia Road (from Ewa), and Kamananui Road and Wilikina Drive (from the North Shore). Vehicle traffic on Schofield Barracks is contained primarily through Trimble and Lyman Roads, and Kolekole Avenue. Circulation routes through KTA are contained primarily through Drum Road and Kamehameha Highway.

There is already a reduced level of service on and off post due to current local and commuter traffic. Morning and afternoon commutes tend to experience the heaviest traffic flow. There is also an increased flow of traffic around noon, when installation personnel travel to various on-post dining facilities for lunch. Additionally, a key existing traffic circulation issue for SBMR is excessive traffic through housing areas, which degrades the quality of life and increases the risk to pedestrians and cyclists.

The ROI for Schofield Barracks and the O'ahu Training Sites are as follows:

- SBMR: within the perimeter of SBMR and Wheeler Army Airfield, Kunia Road, Kamehameha Highway, and Wilikina Road;
- DMR: the corridor between SBMR and DMR, which includes the area from central O'ahu to DMR (northwest area of the island); and
- KTA: this consists of Drum Road, the corridor extending from SBMR (central O'ahu) to KTA (the windward side of O'ahu).

LOS for Highway 99, which passes in front of SBMR is currently the lowest LOS designation for traffic used by the Hawai'i Department of Transportation (Level F).

The major urban centers of Hawai‘i Island are Hilo, which is on the eastern side of the Island, and Kailua-Kona, which is on the western side. Air service to these cities is provided by Hilo International Airport and Kona International Airport, respectively. Broadly, the major cities are linked by state highways. The primary roadways on the Island are Queen Ka‘ahumanu Highway, Māmalahoa Highway, Hawai‘i Belt Road, Volcano Highway, Kawaihae Road,

and Waikoloa Road. Saddle Road is the only roadway that runs across the central part of the Island and connects PTA to the surrounding areas between Hilo and Waimea (north of Kailua-Kona). Most major roads in the area are two-lane roads.

Nearby harbors include Hilo Harbor and Kawaihae Harbor. Hilo Harbor is located on the coast of Hilo and provides access by water to Hilo. Kawaihae Harbor which is north of Kailua-Kona includes a fueling station, shipping terminal, and landing area. Kawaihae Harbor is the only harbor used by the military on Hawai‘i Island.

Saddle Road (State Route 200), a two-lane, two-way road between Hilo and its junction with Māmalahoa Highway, is the shortest route across the Island and it is the primary road providing access to and from PTA. In addition, to serving as the key roadway to PTA, it is the only road to several observatories, ranches and residential locations, and other recreational areas located towards the island's interior.

The ROI for Hawai'i includes Kawaihae Harbor and roads leading from it to PTA as well as routes from Hilo on Saddle Road to PTA.

4.18.15.2 Environmental Consequences

No Action Alternative

The existing transportation system on O'ahu is extremely stressed and traffic congestion is considerable. LOS in the USAG-HI ROI have segments rated D through F (the lowest rating). That LOS would not get worse as a result of this alternative.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Beneficial long-term effects would be anticipated from the decrease in military fleet vehicles and POVs, likely reducing the severity of the traffic flow issues at the Main Gate entrance to the installation and also reducing traffic regionally on O'ahu and reducing military convoys to and from PTA. With this stationing reduction scenario, the Soldier population would decrease and the reduced traffic would no longer compete as much with seasonal (summertime and spring) traffic conditions associated with tourism. A reduction in military use of range roads or trails within USAG-HI training areas would occur. In addition, impacts to local highways associated with military convoys would also drastically reduce. Potential conflicts between civilian use and military use of local roadways would be reduced proportionately with the reduction in overall military population at USAG-HI (up to 30 percent decrease).

Alternative 2: Installation gain of up to 1,500 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be significant but mitigable impacts anticipated on O'ahu and less than significant impacts anticipated on the Island of Hawai'i. Construction equipment and worker vehicles would have short-term impacts at the Main Gate of SBMP and Fort Shafter and at the roads around any designated construction sites.

Long-term effects would be anticipated from the increase in military fleet vehicles and POVs, potentially causing minor flow issues at the Main Gate entrance to Fort Shafter, Wheeler Army Airfield, and SBMR. With this stationing scenario, the Soldier and dependent population would increase by approximately 5 to 7 percent. The added traffic from these units would compete with seasonal tourism and resident traffic. Traffic utilizing the various main post access gates during morning and evening times may cause minor congestion for short periods of time. Currently, an increase in traffic from Kawaihai Harbor to PTA is not anticipated. If there is a need for such an increase in the future, it will be the subject of additional, site-specific NEPA analysis.

Regulatory and Administrative Measure 1. To alleviate congestion, traffic projects such as the expansion of Lyman Road and Parking Structure would help in alleviating some of the traffic congestion within the installation. Other possible projects such as the ACP bridge from Wheeler

Army Airfield to SBMP would also alleviate traffic congestion within Wheeler Army Airfield and SBMP. Without MILCON funding for these projects, traffic congestion would increase.

The new Stryker Road was completed in 2011. This trail road starts from Schofield Barracks (Macomb Gate) to Helemano Military Reservation. The new trail provides an access route to training areas that precludes the need for Stryker vehicles to utilize state highways; however, there would continue to be traffic impacts on public roadways. This would include convoy traffic on public roads that may periodically cause traffic congestion. Traffic conditions are currently operating at acceptable levels; however, during certain periods, traffic congestion occurs on roads to Wheeler Army Airfield and SBMR. The traffic volumes along the public roadways would remain at current levels, and the LOS would not change as a result of this alternative.

Military vehicles traveling between the Army installations would continue to cross public roadways. Guidance regarding convoys has been established. Examples include, per command guidance, USAG-HI convoys normally maintain a gap of 15 to 30 minutes between serials (a group of military vehicles moving together), 330 feet between vehicles on highways, and 7.5 to 15 feet while in town traffic. Per state regulation, military convoys are not authorized movement on state highways during peak-hour conditions (between 6:00 a.m. and 8:30 a.m. and 3:00 p.m. and 6:00 p.m., Monday through Friday). The maximum number of vehicle per convoy would be 24, and convoy traffic would yield to public traffic at road crossings. These measures would continue to be followed to minimize convoy impacts to traffic.

4.18.16 Cumulative Effects

The cumulative impact analyses for the various alternatives focus on impacts on the environment resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.

The cumulative impact analysis focuses on impacts to the environment resulting from the incremental impact of the action when added to past, present, and reasonably foreseeable future actions. Past and present actions are accounted for in the description of the affected environment for each resource. About 40 reasonably foreseeable future actions were identified for the Island of O'ahu and approximately 10 were identified for the Island of Hawai`i. Some of these actions are ongoing projects that would continue into the future, whereas others would be discrete projects that would be conducted in the reasonably foreseeable future. Many of these projects have had or will have specific NEPA analyses.

Island of O'ahu Actions (Reasonably Foreseeable Future)

Army

- Schofield Barracks, Whole Barracks Renewal, Quad B, Phase 2B, Building 156, FY 2013;
- Wheeler Army Airfield, CAB Complex, Phase 9, 404 Spaces, FY 2013;
- Schofield Barracks, Whole Barracks Renewal, Phase 2C, Unaccompanied Personnel Housing Buildings 157 and 158, FY 2013;
- Schofield Barracks, Area X Electrical Upgrade, FY 2013; and
- Fort Shafter, U.S. Army Pacific Command C2 Facility, Phase 2, FY 2014.

Other Military

- Stationing of MV22 (Ospreys) Aircraft, H-1 Cobra, Huey Helicopters, FY 2014;
- 1,000 additional Marines and additional flights to and around PTA
- Stationing an additional 2,700 Marines from Okinawa relocations; and

- Stationing another 3-ship Navy amphibious group at Pearl Harbor.

Non-military

- Residential Development at Koa Ridge between Pearl City and Mililani;
- Ho'opili Residential Development, Kapolei;
- Waianae Coast Emergency Alternate Route;
- Turtle Bay Resort Improvements; and
- Honolulu Rail Transit Project.

Island of Hawai'i Actions (Reasonably Foreseeable Future)

Army

- Infantry Platoon Battle Course, FY 2013; and
- PTA, Western Section, Defense Access Road (Saddle Road), FY 2015.

Non-military

- Kawaihae/Waimea Road;
- UXO Cleanup Former Waikoloa Maneuver Area and Nansay Sites; and
- Outrigger Telescopes Project.

The following sections describe the cumulative impacts that would be anticipated as a result of alternatives the Army is considering as part of Army 2020 force structure realignments.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

For the following VECs on the Islands of O'ahu , the Army anticipates a beneficial impact due to force reduction: air quality, airspace, noise, soil erosion, biological resources, facilities, energy demand and generation, land use conflict and compatibility, hazardous materials and hazardous waste, and traffic and transportation. The impacts to wetlands will be negligible. There will remain less than significant impacts to water resources. Finally, the impacts to cultural resources and socioeconomics are projected to remain cumulatively significant but mitigable. For the following VECs on the Island of Hawai'i, the Army anticipates a beneficial impact due to force reduction: air quality, airspace, noise, soil erosion, biological resources, facilities, energy demand and generation, land use conflict and compatibility, hazardous materials and hazardous waste, water resources, and traffic and transportation. The impacts to socioeconomics and wetlands on the Island of Hawai'i will be negligible. Finally, the impacts to cultural resources on the Island of Hawai'i will remain significant but mitigable.

Alternative 2: Installation gain of up to 1,500 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Air Quality. Schofield Barracks is a "major source" and maintains a Title V air permit. Individual emissions sources that contribute to the Schofield Barracks' overall status include boiler systems, generators for backup power, government and personal vehicle traffic, aircraft flight operations, various equipment operations, ordnance firing and detonation during training, controlled burning on ranges, and unplanned wildfires.

However, given historical air quality conditions, the cumulative effect of emissions associated with stationing scenarios, in combination with other construction projects and the continuing emissions from highway traffic and other sources, is not anticipated to violate any state or federal O_3 standards or any other NAAQS.

Airspace Resources. No significant cumulative effects would occur to airspace resources as a result of any of the alternatives the Army is considering as part of Army 2020 force structure realignments in Hawai'i.

Cultural Resources. There would be potential cumulative impacts on cultural resources from planned and reasonably foreseeable future projects and from Alternative 2. For Alternative 2 (Growth of up to 1,500 Soldiers), the construction and training the Army would implement would negatively impact public access to traditional areas and potentially cause destruction of cultural sites and landscapes. Historically, residential, commercial, and military development throughout the state has destroyed or damaged cultural resource sites in the State of Hawai`i. Implementation of the mitigation would reduce this combined impact to less-than-significant.

Noise. Steady development in the State of Hawai`i has continued to contribute to noise conditions experienced by residents. Urban and military development and operations associated with both produce noise from vehicles, aircraft, military training, and construction activities. Noise conditions near proposed activities associated with alternatives discussed in this document are not likely to have substantively changed in recent years because activity levels for major noise sources have not grown or declined substantively.

Soil Erosion. If the Army selects Alternative 2 (Growth of up to 1,500 Soldiers) it would contribute to cumulative impacts from soil erosion. The major influence on soil erosion in the area is the disturbance of soils, modification of slopes and drainage features, and loss or disturbance of vegetation due to agricultural conversion, military activities, fires, roads, modification of slopes and drainage features, and other development. While soil erosion and deposition is a naturally occurring phenomenon in any landscape, adverse impacts may occur when erosion rates are accelerated by human or natural disturbances.

Biological Resources. When analyzing past, present and reasonably foreseeable future actions, the cumulative impact of implementing Alternative 2 (Growth of up to 1,500 Soldiers) would be significant without the mitigation measures described below. Actions would result in significant biological impacts with the completion of ongoing Army Transformation training range projects, the new program to modernize ranges at the PTA on the Big Island, and with increased use of Army ranges by the U.S. Marine Corps to support the potential stationing of additional Marines in Hawaii and training exercises with the MV-22 Osprey aircraft.

Private and public development of land throughout the state continues to degrade native species habitat; however, habitats throughout the state continue to support common and sensitive species of plants and wildlife. The spread of invasive plant species as a result of development and construction could cause landscape changes and thereby modify habitats important to sensitive species. Notable private construction projects that may present new impacts to native species include residential development on 763 acres at Koa Ridge between Pearl City and Mililani (3,000-4,500 homes with infrastructure). Large-scale transit projects in and around Honolulu may also cause damage or destruction to native plant or animal species. Overall development (military, private, public) throughout Hawai`i is likely to continue to impact native species.

Implementation Plans developed for MMR, O'ahu training sites, and PTA are guides for conservation efforts focused on stabilizing endangered species that could be affected by military training. The intent of the installation INRMPs would be to provide goals and objectives to properly manage and conserve wildlife species while supporting the various military missions assigned. Implementation of these plans would reduce the potential cumulative impacts to less-than-significant.

Wetlands. The cumulative impacts involving wetlands are anticipated to be less than significant for all alternatives.

Water Resources. Cumulative impacts to water resources are only anticipated to occur from Alternative 2 (Growth of up to 1,500 Soldiers) and those impacts are anticipated to be less than significant. In spite of the additional training these Soldiers would require, there would potentially be less than significant to significant but mitigable long-term cumulative impacts on surface water quality from suspended sediment resulting from training activities.

Facilities. Facilities availability and utilities capacity available to support Alternative 2 (Growth of up to 1,500 Soldiers) is a major concern, and along with past, present, and reasonably foreseeable projects on the Island of O'ahu and in the State of Hawai'i could result in adverse impacts to the environment in the form of increased sewage spills, increased demands on potable water supplies, power outages, etc. These impacts would require infrastructure improvement that would have to be funded and built in order to reduce these impacts to less-than-significant. The specific requirements are not yet known and would be the subject of additional, site-specific NEPA analysis.

Socioeconomics. Long-term direct and indirect beneficial cumulative effects are anticipated because of increased sales volume and employment in the area as a result of the implementation of Alternative 2 (Growth up to 1,500 Soldiers). Additional increases in sales, employment, and income could also occur from other foreseeable actions. A lasting economic benefit would result from increased expenditure of discretionary income of Soldiers and their Families.

Schools would also be impacted throughout O'ahu for Alternative 2. Data available for the 2007-2008 school year suggests most schools operating on O'ahu have excess capacity to accommodate new students. Past Army stationing actions are already considered in these estimates provided by the State of Hawai`i Department of Education. An increase in enrollment from Alternative 2 may not significantly impact school enrollment capacity on O'ahu. Cumulative impacts may be more significant when considering potential growth collectively from Army actions, general civilian population growth, and potential expansion of the U.S. Marine Corps footprint at Kaneohe Bay.

The Island of O'ahu has a high degree of military, DoD contractor, and government jobs. The proposed force reduction at Schofield Barracks would be considered less than significant to the ROI as a whole. It is anticipated that the U.S. Army, U.S. Navy, U.S. Air Force and U.S. Coast Guard will all probably be making reductions. Thus cumulative impacts of U.S. Army, U.S. Navy and other military service reductions, along with government hiring freezes and cuts would have significant adverse cumulative socioeconomic impacts. There is not enough known about the plans of other services yet to say what the combined economic impacts would be. Like the Army, the other services may tie reductions to the changing world security situation and may not be able to predict exactly what reductions will be. Decisions may be made at the beginning of each year, based on each service's needs and the global mission, as the move toward Army 2020 occurs. Any site-specific NEPA analysis that the Army conducts will have to take into account actions by other services, as they become known and as appropriate.

Energy Demand and Generation. The cumulative impacts of all alternatives are anticipated to be less than significant with the exception of Alternative 1 (Reduction of up to 8,000 Soldiers) which is anticipated to have a cumulative beneficial effect on energy demand.

Land Use Conflict and Compatibility (including Recreational Activities). The cumulative impacts of all alternatives are anticipated to be less than significant with the exception of

Alternative 1 (Reduction of up to 8,000 Soldiers) which is anticipated to have a cumulative beneficial effect on land use.

Hazardous Materials and Hazardous Waste. The cumulative impacts of all alternatives are anticipated to be less than significant with the exception of Alternative 1 (Reduction of up to 8,000 Soldiers) which is anticipated to have a cumulative beneficial effect on hazardous material/hazardous waste.

Traffic and Transportation. Only Alternative 2 (Growth of up to 1,500 Soldiers) would contribute to an increase in the volume of civilian and off-duty traffic generated by the stationing of new personnel and their dependents at locations in Hawai`i. Military traffic on the state and County road systems would be consistent with historic trends, and much of the traffic would use military vehicle trails rather than public roadways.

Traffic impacts associated with existing military vehicle trail crossings of public roadways would be minimal because the convoy traffic yielding to public traffic and traffic-related impacts associated with construction would be minimal. Traffic along the roadways in the area is anticipated to increase because of the projected population growth and development on both O'ahu and Hawai`i; however, Alternative 2 would result in significant cumulative impacts on off-post traffic when considered cumulatively with other actions and the current traffic conditions on the Island of O'ahu. These significant effects can be mitigated through planned roadway and transit improvements throughout Hawai`i. Some pressure on traffic conditions however, may be relieved upon completion of the light rail transit project planned to follow Farrington, Kamehameha, and Nimitz highways. An increase in use of public transportation would decrease the overall amount of vehicles traveling on highways in those areas. In addition, construction of the North-South Road, Kapolei Highway, and the Waianae Coast Route may also relieve traffic pressure on heavily traveled routes. These mitigation measures would be looked at in the site-specific NEPA analysis that would be required for implementation of Alternative 2.

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4.19 FORT SILL, OKLAHOMA

4.19.1 Introduction

Fort Sill borders the City of Lawton, Oklahoma and covers approximately 94,000 acres (Figure 4.19-1). The installation is the home of the U.S. Army Fires Center of Excellence, an organization combining the U.S. Army Artillery Center and School and the U.S. Army Air Defense Artillery Center and School. Principal operational units at Fort Sill include the 75th and 214th Fires Brigades, the 428th and 434th Field Artillery Brigades, and the 31st and 30th Air Defense Artillery Brigades. BRAC increases included relocation of 15 closed National Guard and Army Reserves UICs to the installation. Fort Sill is also one of the five locations for Army Basic Combat Training.

Figure 4.19-1. Fort Sill

As the home of the U.S. Army Fires Center of Excellence, the installation mission is to train Soldiers and develop Field Artillery and Air Defense Artillery leaders, design and develop fire support for the force, support unit training and readiness, mobilize and deploy operating forces, and maintain installation infrastructure and services.

As a result of the implementation of the Proposed Action, the permanent party Soldier and Army civilian employee population of Fort Sill could be reduced by up to 4,700 personnel and their accompanying dependents. In addition, there would be a projected 10 percent reduction in the number of students that train at Fort Sill annually. Much of the institutional training would continue as it currently is being conducted by the U.S. Army Fires Center of Excellence and other TRADOC units, however fewer students would be trained as the demand for the number of Soldiers trained for specific military functions, such as field artillery operations, would decrease in relative proportion to the overall size of the Army.

4.19.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Sill does not anticipate any significant adverse environmental impacts as a result of the implementation of Alternative 1 (Force reduction of up to 4,700 Soldiers and Army Civilians); however, Fort Sill does anticipate significant adverse socioeconomic impacts to economic activity, population, school districts, public services, medical services, and Family support services as a result of Alternative 1. Table 4-19-1 summarizes the anticipated impacts to VECs from each alternative.

Table 4.19-1. Fort Sill Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 4,714
Air Quality	Beneficial	Beneficial
Airspace	Negligible	Negligible
Cultural Resources	Less than Significant	Significant but Mitigable
Noise	Significant but Mitigable	Beneficial
Soil Erosion	Negligible	Negligible
Biological Resources	Negligible	Negligible
Wetlands	Negligible	Negligible
Water Resources	Negligible	Beneficial
Facilities	Negligible	Beneficial
Socioeconomics	Minor	Significant
Energy Demand and Generation	Negligible	Beneficial
Land Use Conflict and Compatibility	Negligible	Beneficial
Hazardous Materials and Hazardous Waste	Negligible	Less than Significant
Traffic and Transportation	Minor	Beneficial

4.19.1.2 Valued Environmental Components Dismissed from Detailed Analysis

For the VECs discussed in this section, no more than a beneficial or negligible impact is anticipated. Therefore, these VECs are not being carried forward for detailed analysis, as no potential for significant impacts exists.

- ***Air Quality.*** EPA Region 6 and the Oklahoma Department of Environmental Quality regulate air quality in Oklahoma. The CAA gives EPA the responsibility to establish the primary and secondary NAAQS (40 CFR Part 50). The NAAQS set acceptable concentration levels for seven criteria pollutants: PM, fine particles, SO_2, CO, NO_x, O_3, and lead. Short-term standards (for 1-, 8-, and 24-hour periods) have been established for pollutants that contribute to acute health effects, while long-term standards (annual averages) have been established for pollutants that contribute to chronic health effects. Each state has the authority to adopt standards stricter than those established under the federal program; however, Oklahoma accepts the federal standards. Federal regulations designate AQCRs that are in violation of the NAAQS as nonattainment areas and those that are in accordance with the NAAQS are attainment areas.

  Fort Sill lies within an air quality attainment area for all HAPs, and no additional clean air permits would be required for this action (Sherman, 2011).

  Under the No Action Alternative, Fort Sill would continue to emit emissions at the current permitted levels. There would be no changes to current emissions level or air quality impacts and the installations current air permit would remain in effect.

  The No Action Alternative would reduce air emissions of NAAQS pollutants and HAPs through a decrease in vehicle traffic and use of field generators. Minor short-term impacts to air quality would be anticipated from building demolitions, but overall impacts would be beneficial impacts from reduced long-term emissions resulting from a reduced volume of vehicle, generator, and stationing source emissions. There would be no exceedance of permitted installation air emissions as a result of the implementation of Alternative 1.

- ***Airspace.*** Fort Sill has 243 square miles of FAA-designated SUA from surface to 40,000 feet. The Fort Sill ARAC has been delegated an additional 5,700 square miles of approach control airspace surface to 7,000 feet. The installation has access to this airspace continuously and it is controlled by the ARAC of Fort Sill, Oklahoma (Thorton, 2011). Neither alternative includes changes (neither horizontal nor vertical) to the FAA-designated SUA, to include access; therefore, there would be no impact to airspace

- ***Soil Erosion.*** The Soil Conservation Service surveyed soils on Fort Sill (outside of the impact areas) in 1970, and identified 32 soil mapping units. For the most part, Fort Sill soils closely mimic their parent material. East Range soils are predominantly reddish clay and fine grained sand assemblages in the Zaneis, Lucien-Zaneis-Vernon complex, and Vernon series. East Range bottomland soils are generally in the Port loam and Lawton loam series. From the cantonment area to Blue Beaver Valley to the south of the Wichita Mountains, the soils reflect their rhyolitic background and are in the Foard, Tillman, Vernon, and Hollister soil series. Soils south of the mountains west of Blue Beaver Valley reflect their granitic past, and belong to the Foard-slickspot complex, Lawton loam, Windthorst sandy loam, and Port loam series. The mountains themselves are granite outcrops and stony rock land. These alternatives are not anticipated to impact soil erosion rates. Fort Sill soils, in general, are susceptible to erosion. Erosion problem areas on Fort Sill, from east to west, include the eastern boundary, particularly in the Potato Hill area; the Adams Hill area; the area just to the southwest of the cantonment area; the northwestern portion of West Range; and the far western portion

of Quanah Range. These areas erode regardless of man-made disturbance. Fort Sill utilizes a variety of BMPs to reduce soil impacts (Fort Sill, 2003). Neither alternative includes major ground-disturbing activities; therefore, there would be no impact to any geology or soil resources.

- ***Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species).***

  Vegetation. Fort Sill lies in an ecological transition area where tall-grass prairie merges with short-grass prairie, and soil variation has created diverse plant communities. Grassland communities constitute more than 70 percent of Fort Sill. There are three major grassland types. Tall grasses like big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), switchgrass (*Panicum virgatum*), and Indian grass (*Sorghastrum nutans*) dominate sites with deep soils. Native legumes and other forbs are also numerous in these areas. Medium and short grasses like blue grama (*Bouteloua gracilis*) and sideoats grama (*B. curtipendula*) occupy more droughty hardland and slickspot soils. Medium and short grasses like hairy and sideoats grama (*Bouteloua spp*.) and fall witchgrasses (*Leptoloma cognatum*) are abundant on very shallow rocky soils. There are no federally protected plant species on the installation. Oklahoma does not have a law that protects rare plant species, so no official list of state rare plants exists (Fort Sill, 2003).

  Wildlife. The diversity of natural environments at Fort Sill provides suitable habitat for a wide variety of animal species. Frequently encountered animal life includes a wide range of common invertebrates, birds, fish, reptiles, amphibians, rodents and feral hogs. Large herbivores and large carnivores such as mountain lions (*Felis concolor*), although present, are less frequently encountered.

  Game species found at Fort Sill include bobwhite quail (*Colinus virginianus*), white-tailed deer (*Odocoileus virginianus*), mourning dove (*Zenaida macroura*), pheasant (*Phasianus colchicus*), elk (*Cervus elaphus*), raccoon (*Procyon lotor*), various waterfowl species, and coyote (*Canis latrans*). Common mammals inhabiting the installation include bobcat (*Lynx rufus*), striped skunk (*Mephitis mephitis*), cottontail rabbit (*Sylvilagus floridanus*), fox squirrel (*Sciurus niger*), beaver (*Castor canadensis*), opossum (*Didelphis virginiana*), prairie vole (*Microtus ochrogaster*), deer mouse (*Peromyscus maniculatus*), white-footed mouse (*P. leucopus*), and several bat species. Fish species commonly found on Fort Sill include largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), redear sunfish (*L. microlophus*), green sunfish (*L. cyanellus*), and channel catfish (*Ictalurus punctatus*).

  Federally-listed species that may occur in Comanche County are the black-capped vireo (*Vireo atricapillus*), least tern (*Sterna antillarum*), piping plover (*Charadrius melodus*), and whooping crane (*Grus americana*). The black-capped vireo is the only federally-listed species documented to occur at Fort Sill. Habitat for the black-capped vireo is scattered within the training areas north and west of the cantonment area (Fort Sill INRMP).

  A reduction in force would decrease the frequency of land usage in the Fort Sill training areas, limiting potential Soldier disturbance of sensitive species and habitats. No effect on federally- or state-listed, threatened, or candidate species is anticipated.

  Neither alternative includes activities that would have additional impacts on fish and wildlife, threatened and endangered species, habitat, natural resources, or vegetation. There would be no impact to biological resources, and analysis of impacts is; therefore, not carried forward for further analysis.

- ***Wetlands*.** Fort Sill wetlands were inventoried using February 1983 and March 1984 photographs. The USFWS completed verification of wetland information from aerial

photographs taken in 1995. This survey indicated 1,174 acres of wetlands on Fort Sill. These 1,174 acres include 333 acres of Lacustrine and Limnetic type wetlands, 188 acres of Riverine type wetlands, and 653 acres of Palestine type wetlands. In addition, 352 miles of linear wetlands were indicated in the mapping report (Fort Sill, 2003). No effects on wetlands would be anticipated as a result of this action provided appropriate BMPs are enforced during construction and demolition activities. Neither alternative includes any major ground-disturbing activities that would result in un-permitted loss of wetlands; therefore, there would be negligible impact to wetlands anticipated.

- ***Water Resources.***

Surface Water. Many small impoundments have been constructed on Fort Sill. There are 227 ponds and lakes ranging in size from less than 1 acre to the 293-acre Lake Elmer Thomas. Ponds and lakes are managed for fisheries or designated for wildlife use. Many ponds are used for firefighting purposes.

Fort Sill is in the surface drainage basin of the Red River and its tributaries. The Cache Creek system, the primary tributary in the Lawton-Fort Sill area, drains from the north to south ending in the Red River. Cache Creek has two main forks, East Cache and West Cache, which merge just prior to reaching the Red River. East Cache Creek is the main fork. On East Cache Creek and its primary tributary, Medicine Creek, two lakes (Lawtonka and Ellsworth) supply Fort Sill and Lawton with potable water.

About 52 percent of Fort Sill is within the East Cache Creek watershed; 40 percent lies within the West Cache Creek watershed; and 8 percent is in the Beaver Creek watershed. A section of East Cache creek is listed on Oklahoma's 303(d) list of impaired waters for lead and turbidity. Beaver Creek watershed supplies Waurika Reservoir, which supplements Lake Lawtonka and Lake Ellsworth to provide Lawton-Fort Sill and other communities with water (Fort Sill, 2003).

Groundwater. Groundwater in the area around Fort Sill occurs in three aquifers: the Arbuckle Group (Cambrian and Ordovician), the Post Oak Conglomerate (permian and Cimarronian), and Alluvian (Quaternary). All are partially recharged from Fort Sill surface waters.

The Arbuckle Group aquifer is the largest source of groundwater in the immediate area of Lawton-Fort Sill, but it is generally poor quality. Oklahoma has designated beneficial uses for the Arbuckle Group as irrigation, municipal and domestic water supply, industrial, and non-irrigation agricultural. Several small communities in the area use this water source.

The Post Oak conglomerate consists of limestone conglomerate, about 40 feet thick near limestone outcrops. It generally yields only about 10 gpm to wells. It is considered a minor aquifer.

The Alluvial aquifer is made up of sand, clay, and gravel along floodplains, and it is as much as 32 feet thick. Water yields vary from 5-500 gpm. Recharge is by precipitation on floodplains and stream bed infiltration. Most water produced is generally poor quality and used for domestic and stock. It may occasionally exceed state drinking water primary or secondary standards (Fort Sill, 2003).

Water Rights. The Oklahoma Water Resources Board permits water rights. Although surface water is available, Fort Sill has no substantial water use rights (Silverstrim, 2011).

Water Supply and Demand. Fort Sill purchases water for domestic and other uses from the City of Lawton. The installation operates two pump stations, which draw water from Lawton's 24- and 16-inch transmission mains that pass through the installation on

an easement. The maximum combined flow rate of the two pump stations is 11.5 mgd. Installation water usage is generally less than 2 mgd. Two water treatment facilities are operated by the City of Lawton located in Medicine Park and Southeast Lawton. Primary water sources are Lake Lawtonka and Lake Ellsworth, owned by the City of Lawton, and Waurika Lake, a federal reservoir (Fort Sill, 2003).

Wastewater. Fort Sill's wastewater treatment system is owned and operated by American Water Enterprises. The on-post WWTP has a design capacity of 4.3 mgd, while the annual average flow is 1.7 mgd. The WWTP discharges treated effluent into East Cache Creek under a NPDES permit (Bennett, 2010).

Stormwater. Fort Sill has a General Permit for the Small MS4, and a Multi-Sector Stormwater General Permit for stormwater discharges from industrial facilities. Construction projects over 1 acre each get their own Stormwater Permit from the state for discharges from construction activities. Fort Sill's MS4 Stormwater Permit requires the use of BMPs on all projects to limit erosion and sedimentation. Stormwater retention and reuse technologies are specified in 5,000 square foot or larger project designs to achieve compliance with the Energy Independence and Security Act requirements (Silverstrim, 2011).

There would be negligible impact under the No Action Alternative. Fort Sill would continue to generate wastewater, impact surface water, and consume potable and non-potable water at its current rates of consumption, purchasing water for domestic consumption and other uses from the City of Lawton.

BMPs would be followed during all construction and demolition activities to reduce sedimentation and impacts to surface waters. Alternative 1 would have only minor temporary effects on Fort Sill's water resources and would not violate any state or federal water quality regulations. Demolition activities would have beneficial long-term impacts, resulting in less impervious areas and reducing runoff quantities and flow rates. Minor beneficial impacts would occur to surface waters from a reduction in training, and water demand would be reduced on and off post as the Soldier and Army civilian employee populations decreased.

- ***Facilities.*** Fort Sill is comprised of 7,800 acres of cantonment area and 85,608 acres of rangeland. Rangeland includes 37,306 acres of impact area and 48,302 acres of training areas. There are 16 small arms ranges, 6 non-firing courses, and 33 training areas utilized for live fire. In addition, about 3,000 acres of land are available for agricultural use. The cantonment area is laid out like a small city with areas for housing, industrial, administrative, medical, recreation, and an airfield. In addition to the 2,400 buildings and other structures on the installation, Henry Post Airfield has a 5,000- by 200-foot paved runway and two sod runways. Other airstrips on Fort Sill include a UAS strip at Frisco Ridge, three sod airstrips used as staging fields and helicopter landing zones, and five paved helicopter landing pads (Fort Sill, 2003).

  There would be no impact anticipated from the continued implementation of the No Action Alternative. Fort Sill would continue to operate and maintain its existing facilities in accordance with its current requirements. Fort Sill would continue to implement the FRP.

  The proposed force reduction would have a minor beneficial effect on facilities, allowing for the removal and release of temporary, relocatable, buildings and the demolition of some older, energy inefficient buildings. With the implementation of force reduction, some permanent facilities may be able to be redesignated to support units remaining at Fort Sill to provide more space and facilities better able to meet tenant unit needs.

Additional actions would be programmed under the FRP to increase installation building performance and energy efficiency to save on installation operating costs and utilities.

- ***Land Use Conflicts and Compatibility.*** Fort Sill is in Comanche County in southwest Oklahoma 90 miles southwest of Oklahoma City and 50 miles north of Wichita Falls, Texas. The Wichita Mountains National Wildlife Refuge is adjacent to the installation's northwest boundary. The cantonment area is within the corporate limits of the City of Lawton, Oklahoma. Lawton borders the installation to the south of the cantonment area from the western portion of East Range to the eastern portion of West Range and is the only major metropolitan area near the installation. Mixed land uses, including sparsely populated residential and agricultural areas lie along other boundaries of the installation. Smaller towns near Fort Sill include Cache, Indiahoma, Elgin, and Medicine Park.

  All of the cantonment area, much of Lawton, and some lands adjacent to Fort Sill are within NZ II of large-caliber weapons ranges. Fort Sill has obtained DA approval for six ACUB zones along the northeastern, eastern, southern, and western installation boundaries. The purpose of the ACUB program is to limit incompatible development around the installation and to protect future training activities on lands outside the installation. The total area of the six buffers proposed for land easements to prevent future development is 19,415 acres. The Army has appropriated money for the purchase of the buffer areas and has a cooperative agreement with the DoD, its partners Land Legacy and the USDA, and the first cooperating landowner. The buffers will neither increase nor decrease available training land, but will help to ensure that units at Fort Sill can use the full extent of available training land (U.S. Army, 2008) while minimizing impacts to the surrounding community.

  No changes in existing land use would occur under the No Action Alternative. The installation would continue to train, construct and maintain facilities, and support recreation and other uses.

  The implementation of Alternative 1 would result in a minor decrease in training land use. This has the potential to reduce noise and military training on Fort Sill's training areas across the installation. The demolition of some facilities might open areas for more compatible land use. Overall land use impacts are anticipated to be beneficial impacts.

- ***Energy Demand and Generation.***

  Electric. The entire Fort Sill cantonment area is served by all utility systems, including electric, gas, water, sewer, and communications. All primary electric power is supplied by American Electric Power from a 50-MW, 69,000-volt substation and a newer 80-megavolt-ampere substation. The electric system on the installation is owned by the government and is currently being upgraded and converted to an underground distribution system. Fort Sill used 167,647,200 kWh in FY 2004 (AAFES, 2011).

  Natural Gas. Fort Sill's natural gas system has been privatized and is currently owned and operated by Oklahoma Natural Gas. Fort Sill uses 600,000-700,000 dekatherms of natural gas per year depending on weather. The installation has a contract with CenterPoint Energy to transport 10,800 dekatherms per day if required (AAFES, 2011).

  Sustainable Energy. Geothermal wells have been installed across the installation for heating and cooling purposes. New constructions, as well as older structures, are being outfitted with solar panels to supplement energy usage. Currently, the wastewater reuse recycling system is being installed at the WWTP and plans are in place to construct a microgrid system that will use solar and wind power to support the installation during power outages (Brown, 2011).

Fort Sill has adequate access to its energy supply and would continue to use energy at its current rates under the No Action Alternative. Only negligible impacts are anticipated.

A reduction in force would likely cause a decrease in energy demand and usage across the installation. Alterations or relocations of existing utility systems would not be anticipated. Fort Sill would continue to pursue initiatives for increased energy efficiency, to include the demolition of older less efficient buildings as a result of this alternative. Overall impacts to energy demand and use would be beneficial.

Fort Stewart anticipates that the implementation of any of the alternatives would result in negligible impacts for those VECs discussed above. The following provides a discussion of the VECs requiring a more detailed analysis, as they are anticipated to have the potential of a higher level of impact as a result of the implementation of the Proposed Action alternatives.

4.19.2 Cultural Resources

4.19.2.1 Affected Environment

The Fort Sill Military Reservation contains a variety of cultural resource properties located across the installation. This includes the Fort Sill NHL District. There are many additional properties on Fort Sill that are listed on the NRHP including buildings, historic and archaeological sites, and cemeteries. Fort Sill's ICRMP is currently being revised and updated. Cultural resources are currently being managed through project reviews on a case by case basis in accordance with 36 CFR 800 (Savage, 2012).

4.19.2.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, cultural resources would continue to be managed and monitored through the CRMP. Installation cultural resource staff would continue to consult with the SHPO on any action that could potentially impact eligible cultural resources. Less than significant impacts to cultural resources would occur under the No Action Alternative.

Alternative 1: Force Reduction (up to 4,700 Soldiers and Army Civilians)

Fort Sill anticipates significant but mitigable adverse impacts from potential facilities demolition and long-term minor beneficial impacts to cultural resources as decreased training activity would reduce the risk of inadvertent disturbance of artifacts and archaeological sites. A reduction in force size would cause an increase in vacant structures within the cantonment area. This poses the threat of potential abandonment to historic buildings and structures that could be eligible for potential listing on the NRHP. The Fort Sill CRMP staff would continue to monitor historic structures as a result of the implementation of Alternative 1.

Any ground disturbing activity resulting from the removal of structures would be coordinated with Fort Sill's CRM and the SHPO as necessary. The risk of NHPA, ARPA, and NAGPRA violations would not increase under the Proposed Action. By implementing appropriate mitigation measures along with continued monitoring by CRMP staff, there would be a very low potential for adverse effects to historic buildings and/or archeological resources. Facilities demolition would be conducted in accordance with the current agreements between Fort Sill's CRM and the state for consultation and management of historic structures. If the undertaking has the potential to adversely affect historic properties, consultation with the SHPO would occur per 36 CFR 800 as required.

4.19.3 Noise

4.19.3.1 Affected Environment

Typical activities at Fort Sill that produce noise include blast noise from artillery and impacting artillery rounds, fixed and rotary-wing aircraft, Air Force operations at Quanah Range, close air support training, general personnel activities of the cantonment area, and roadway noise of major arterial routes passing through Fort Sill.

The Fort Sill IONMP was completed in June 2008 by the U.S. Army Center for Health Promotion and Preventive Medicine. The IONMP provides a methodology for analyzing exposure to noise hazards associated with military operations and provide land use guidelines for achieving compatibility between the Army and the surrounding communities. The noise impact on the community is translated into NZs. The program defines three NZs. NZ I is compatible for most noise-sensitive land uses. NZ II is normally incompatible for noise-sensitive land uses. NZ III is incompatible for noise-sensitive land uses.

The conclusions from the IONMP reflect that the NZs from small arms training are contained within the Army installation boundaries. Large caliber operations have NZs that go off post and may produce peak noise levels that can generate a moderate or high risk of complaints beyond the installation boundary (U.S. Army, 2008).

4.19.3.2 Environmental Consequences

No Action Alternative and Alternative 1

There are no changes to anticipated impacts from noise under the No Action Alternative. Noise would continue to be a potentially significant impact that is mitigated to less than significant through the management and scheduling of training activities. Fort Sill would continue to manage the duration, frequency and timing of noise generating training events to reduce potential impacts to sensitive noise receptors and the surrounding communities.

Alternative 1: Force Reduction (up to 4,700 Soldiers and Army Civilians)

Alternative 1 would result in a beneficial impact to noise. There are no changes to anticipated impacts from noise under this alternative. A reduction in personnel would decrease the frequency of noise generating training events and the amount of noise created by the installation during field training and LFX resulting in a minor beneficial impact. While the frequency of training events would decrease, however, the types of peak noise generating events that cause NZs off post (firing of artillery and other large-caliber systems) would continue to occur. Noise contours would be projected to diminish with a decrease in the frequency of noise generating training events.

4.19.4 Socioeconomics

4.19.4.1 Affected Environment

Fort Sill is located near Lawton, Oklahoma, about 90 miles southwest of Oklahoma City. The ROI consists of Comanche County.

Population and Demographics. The Fort Sill population is measured in three different ways. The daily working population is 11,730, and consists of Soldiers and Army civilians working on post. The population that lives on Fort Sill consists of 3,400 Soldiers and an estimated 2,240 dependents, for a total resident population of 5,640. This does not include temporary trainees and students, which add significantly to the resident on-post population. Fort Sill averages a daily population of over 9,500 temporary trainees and students. Finally, the portion of the ROI

population related to Fort Sill is 20,991 and consists of Soldiers, civilian employees, and their dependents living off post.

The ROI county population is almost 125,000. The 2010 population increased 7.9 percent over the year 2000. The racial and ethnic composition of the ROI is presented in Table 4.19-2.

Table 4.19-2. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Oklahoma	69	7	9	2	8	5	0
Lawton	59	17	5	11	2	5	1

Employment, Income, and Housing. Fort Sill currently has 1,400 Family housing units on post managed through a partnership with Picerne Military Housing through the RCI. Permanent party Soldiers occupy all available on-post housing units. Fort Sill has barracks space for 2,546 unaccompanied permanent party personnel. Permanent party Soldiers are allotted 118 square feet of living space while Trainee Soldiers are allotted 72 square feet. Approximately 5,000 off-post Family housing units support Fort Sill Soldiers (Love, 2012). Military students impact the community differently as they are housed on post, but generate demand for hotels and dining regionally as their Families travel to graduations.

Compared to 2000, the 2009 employment (private nonfarm) increased by 16.8 percent in Comanche County. State employment increased by 7.41 percent. Total private nonfarm employment for Comanche County in 2009 was 32,225. Total private nonfarm employment for the State of Oklahoma in 2009 was 1,290,278. The 2005-2009 median home value was $98,800 in Comanche County, and the state median value was $185,400. The 2009 median household income was $45,672 in Comanche County. State median income was $41,716. Based on 2009 data, the percent of the population below the poverty level was 15.00 percent for Comanche County. State poverty level was 16.10 percent.

***Schools*.** Permanent party military dependants living on post attend Lawton Public Schools. There are two elementary schools located on post that serve 698 military dependents. All middle and high school students residing on post attend off-post schools. Military connected children contribute as many as 6,636 school-age children to the regional education system (Installation Management Command-Central District Information Summary). Children living off post are served by various school districts in the surrounding as noted in Table 4.19-3.

Table 4.19-3. School Capacity Data

District Name	District Size	Number of Schools	Total Children	Total Military Connected Children	Military Connected Children (Percent)
Bishop School	Tier Two	1	471	178	37.79
Boone-Apache Schools	Tier Three	1	639	2	0.31
Cache Public Schools	Tier Two	1	1,660	225	13.55
Central High Public Schools	Tier Two	1	433	30	6.93
Chattanooga Public Schools	Tier Three	1	291	20	6.87

District Name	District Size	Number of Schools	Total Children	Total Military Connected Children	Military Connected Children (Percent)
Cyril Public School	Tier Three	1	362	8	2.21
Duncan Public Schools	Tier Two	1	3,862	75	1.94
Elgin Public Schools	Tier One	1	1,973	527	26.71
Fletcher Public Schools	Tier Two	1	500	54	10.80
Flower Mound School	Tier Two	1	324	130	40.12
Frederick Public School	Tier Three	1	887	15	1.69
Geronimo Public Schools	Tier Two	1	512	89	17.38
Indiahoma Public Schools	Tier Two	1	199	64	32.16
Lawton Academy of Arts and Sciences	Tier Two	1	112	39	34.82
Lawton Christian School	Tier Two	1	427	100	23.42
Lawton Public Schools	Tier One	34	15,860	4,836	30.49
Marlow Public Schools	Tier Three	1	1,292	3	0.23
Private/Charter School(s)	Tier Three				0.00
St. Mary's Catholic School	Tier Two	1	156	61	39.10
Sterling Public Schools	Tier Two	1	430	69	16.05
Trinity Christian	Tier Two	1	83	40	48.19
Walters Public Schools	Tier Two	1	716	71	9.92
Fort Sill Totals		54	31,189	6,636	21.28

Police Services. The Fort Sill Police Department oversees policing operations, patrols, general and absent without leave investigations, training, and traffic accident and criminal investigations. city, county, and state police departments provide law enforcement in the ROI.

Fire and Emergency Services. The fire department responds to emergencies involving structures, facilities, transportation equipment, hazardous materials, and natural and man-made disasters; directs fire prevention activities; and presents public education programs. The Fort Sill Fire and Emergency Services Division has mutual aid agreements with Comanche, Cotton, Grady, and Tillman counties the City of Lawton, Reynolds Army Community Hospital, Wichita Mountains National Wildlife Refuge, Great Plains Technology Center, the City of Lawton Emergency Communications Center (911), and the State of Oklahoma/City of Tulsa (800MHz Radio System) (Langford, 2012).

Medical Facilities. Fort Sill's on-post medical services are administered at Reynolds Army Community Hospital. The hospital and the two Troop Medical Clinics are located on the installation; the Frontier Medical Home Clinic is located in the Lawton Community. These facilities provide healthcare to basic trainees, AIT students, reservists, Active Duty personnel and their Family members, as well as retirees and their Family members living within a 70-mile radius of the facility (Rhodes, 2012).

Family Support Services. Fort Sill ACS is a human service organization that has a number of programs and services in place to assist Soldiers and their Families under FMWR. Child, Youth and School Services, a Division of FMWR, provides facilities and child care (ages 6 weeks - 5 years), School Age Care (ages 6 -10 years), Middle School and Teen program (11-18 years), sports and instructional classes to children of Active Duty military, DoD civilian, and DoD

contractor personnel. Children of retired military are eligible to participate in the Middle School and Teen, Youth Sports and SKIES programs. Members of the local community are able to participate in the Youth Sports program. Business programs provide a variety of food, beverage, and recreational outlets. Community sports and recreation support provide a diverse offering of sports, fitness, and community recreational and leisure activities (Spencer-Ragland, 2012).

4.19.4.2 Environmental Consequences

No Action Alternative

Fort Sill's continuing operations represent a beneficial source of regional economic activity. No additional impacts to housing, public and social services, public schools, public safety, or recreational activities is anticipated.

Alternative 1: Force Reduction (up to 4,700[4] Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of approximately 4,700 military employees (Soldier and Army civilian employees), each with an average annual income of $41,830. In addition, this alternative would affect an estimated 2,630 spouses and 4,525 dependent children, for a total estimated potential impact to 7,155 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 11,869 military employees and their dependents.

Based on the EIFS analysis, there would be significant socioeconomic impacts for population and employment in the ROI for this alternative. There would be no significant impacts for sales volume or income. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.19-4. Table 4.19-5 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.19-4. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Positive	9.92	8.63	7.24	7.77
Negative	- 12.21	- 10.04	- 5.25	- 3.75
Forecast Value	- 9.23	- 8.45	- 13.61	- 9.50

Table 4.19-5. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- $206,347,900	- $219,587,700	- 5,306 (Direct) - 675 (Indirect) - 5,982 (Total)	- 11,869
Percent	- 9.23	- 8.45	- 13.61	- 9.50

[4] Calculations used a number of 4,714 Soldiers and civilians for estimating socioeconomic impacts. This number was derived by assuming the loss of 35 percent of the installation's Active Duty Soldiers, and up to 15 percent of the civilian workforce. As discussed in Chapter 3, this number is rounded to the nearest hundred personnel when discussing impacts of Alternative 1.

The total annual loss in volume of direct and secondary sales in the ROI represents an estimated -9.23 percent change from the total current sales volume of $2.23 billion within the ROI. It is estimated that state tax revenues would decrease by approximately $9.27 million as a result of the loss in revenue from sales reductions. Some counties within the ROI supplement the state sales tax of 4.5 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by 8.45 percent. While approximately 4,700 military and government civilian positions would be lost within the ROI as a direct result of the implementation of Alternative 1, EIFS estimates another 592 direct contract service jobs would be lost, and an additional 675 job losses would occur indirectly from reduced demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 5,982 jobs, or a -13.61 percent change in regional employment. The total number of employed positions (non-farm) in the ROI is estimated to be 43,955. A significant population reduction of 9.50 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 125,000 people (including those residing on Fort Sill) that live within the ROI, 11,869 military employees and their dependents would no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes Soldiers, civilians, and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.19-6 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.19-6. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- $215,529,994 (Local) - $325,203,883 (State)	- $239,587,524	- 5,325 (Direct) - 679 (Indirect) - 6,004 (Total)
Percent	- 9.66 (Total Regional)	- 9.22	- 13.66

The total annual loss in volume of direct and secondary sales in the region represents a -9.66 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 0.43 percentage points more than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, state tax revenues would decrease by approximately $14.63 million as a result of the loss in revenue from sales reductions, which would be $5.36 million more in lost state sales tax revenue that projected by the EIFS model. Regional income is projected by RECONS to decrease by 9.22 percent, slightly more than the 8.45 percent reduction projected by EIFS. While approximately 4,700 Soldier and Army government civilian positions would be lost within the ROI as a direct result of the implementation of Alternative 1, RECONS estimates another 611 military contract and service jobs would be lost, and an additional 679 job losses would occur indirectly as a result of reduced demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 6,004 jobs, or a -13.66 percent

change in regional employment, which would be 0.05 percentage points more than projected by the EIFS model.

When assessing the results together, both models predict similar economic impacts of the implementation of Alternative 1 would lead to a net reduction of economic activity within the ROI.

***Schools*.** Alternative 1 would lead to a significant reduction in enrollment, averaging a 10.6 percent drop across the ROI. Some schools would experience more than a 20 percent loss in enrollment. With the loss of state and Federal Impact Aid, this may affect their viability or force regional school consolidations.

Public Services. Police, Fire and Emergency services would be adversely affected by a significant reduction in local taxes throughout the ROI. The existing mutual aid agreements would not be expected to change, but it may increase frequency of requests for aid because of diminished capabilities.

Medical Services. Medical services would not be expected to have any significant change. Demand would continue for these services at reduced levels. Fort Sill does not anticipate significant adverse or beneficial impacts to public health and safety under the Proposed Action.

***Family Support Services*.** A reduction in permanent-party Soldiers could reduce demand on select Family support service providers on post. Demand would continue child care and other ACS programs available on Fort Sill. Off-post Family support services throughout the region would not likely experience a significant decrease in clients. Fort Sill does not anticipate significant adverse or beneficial impacts to Family support services under the Proposed Action.

Environmental Justice. As a result of the implementation of Alternative 1, Fort Sill does not anticipate a disproportionate adverse impact to minorities, economically disadvantaged populations, or children in the ROI. Fort Sill anticipates that job losses would be felt across economic sectors and at all income levels and spread geographically throughout the ROI. The proposed force reduction would not have disproportionate or adverse health effects on low-income or minority populations in the ROI. The racial and ethnic composition of the ROI is more diverse from that of the rest of the state. With the exception of Native Americans, all ethnic and racial groups are more prevalent in the ROI. At the statewide level, adverse impacts in the ROI represent a disproportionate adverse impact to Hispanic, Asian, and African Americans.

4.19.5 Hazardous Materials and Hazardous Waste

4.19.5.1 Affected Environment

Numerous maintenance activities, such as vehicle operation and maintenance, hospital services, and grounds maintenance, require the use and storage of regulated and non-regulated hazardous materials. Fort Sill has developed a Hazardous Materials and Waste Management Plan which prescribes responsibilities, policies, and procedures for managing hazardous materials and waste on post. The plan was written to ensure compliance with applicable federal, state, and local laws and regulations. Fort Sill's SPCC Plan addresses the prevention of unintentional pollutant discharges from the bulk storage and handling of petroleum products and other hazardous materials. The plans detail the specific storage locations, the amount of material in potential spill sites throughout Fort Sill, and spill countermeasures that must be taken to minimize hazards from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste. In addition, Fort Sill has incorporated hazardous waste reduction and pollution prevention into its hazardous waste management operations. Examples of hazardous wastes generated at the installation are waste paint, spent solvents, photographic waste,

contaminated fuel, battery waste, pharmaceutical waste, aerosols, alcohols, acids, pesticides, and paint thinners.

Fort Sill operates as a large-quantity generator under a single EPA identification number. Specific generators on post are managed as satellite accumulation points. Satellite accumulation points are areas located at or near the point of generation where 55 gallons (or less) of hazardous waste may be accumulated. The Environmental Quality Division operates a less-than-90-day lot where wastes are stored prior to transport to a Treatment, Storage, and Disposal Facility through a DRMO contractor. In keeping with Army policy, Fort Sill uses the Defense Reutilization and Marketing Service and the regional DRMO to transport its hazardous waste off post to a designated Treatment, Storage, and Disposal Facility for proper treatment and disposal or reuse and recycling.

There are only three regulated USTs on Fort Sill. All former USTs on post have been removed and are considered closed in accordance with the Oklahoma Corporation Commission, Petroleum Tank Division. All storage tanks located on Fort Sill must have either secondary containment and/or a leak detection monitoring system, along with spill plans for spill control and countermeasures.

The Fort Sill cantonment area has two Munitions Response Sites under the U.S. Army Military Munitions Response Program. The cantonment area was historically part of an active range from the construction of the installation in 1869 until 1960. Fort Sill is currently conducting remediation activities in heavily affected areas of the cantonment (Greene, 2012).

4.19.5.2 Environmental Consequences

No Action Alternative

There would be negligible impact anticipated under the No Action Alternative. Fort Sill would continue dispose of waste and store and manage hazardous materials in accordance with installation HWMP.

Alternative 1: Force Reduction (up to 4,700 Soldiers and Army Civilians)

Fort Sill anticipates temporary less than significant impacts with the increase in the volume of hazardous waste generated and hazardous material requiring storage. Deactivating units would turn in hazardous material (paints, cleaning solvents, pesticides etc.) for disposal to avoid transportation risks. Deactivating units would also turn in expired hazardous material that require disposal, as hazardous waste, to the appropriate locations as designated by the Fort Sill hazardous waste management office. More rapid implementation of the FRP and removal of temporary facilities could increase the hazardous and solid waste streams as components of some temporary structures, such as treated tent canvas, are disposed of as hazardous waste. Hazardous materials and waste SOPs and management practices would not change. The risk of RCRA or CERCLA violations or violations of Fort Sill's hazardous waste operations would not increase under the Proposed Action. Hazardous waste and materials would be managed in accordance with the installations HWMP and applicable regulations. Over the long-term, force reduction would result in the generation of less solid and hazardous waste produced.

4.19.6 Traffic and Transportation

4.19.6.1 Affected Environment

Fort Sill has 180 miles of roads, including 130 miles of paved roads and 50 miles of gravel roads. There are also about 300 miles of dirt range roads on the installation. The installation's road and street network is, for the most part, a grid system with a vast majority of the installation's roads and streets running north-south or east-west. There are six access gates

onto Fort Sill. Traffic volume through the three highest-volume gates contributes directly to the installation's two primary arterial routes. I-44 runs through the eastern portion of Fort Sill and east of the Lawton central business district. The Fort Sill, Oklahoma Traffic and Transportation Analysis – Projected Impact from the 2005 BRAC Recommendations estimated that daily traffic volume through the Fort Sill gates is approximately 24,554 vehicles. Average daily traffic volume on weekends and holidays through the gates is approximately 11,673 vehicles.

The Fort Sill area is served by the Lawton-Fort Sill Regional Airport, which is south of the City of Lawton and approximately 12 miles from Fort Sill. All flights are routed through the Dallas-Fort Worth airport in northern Texas, approximately 150 miles from Lawton.

The Lawton Area Transit System runs five routes in the greater Lawton Area. The Orange route operates in a circular pattern between the Lawton Central Business District and Fort Sill. Other than the bus lines and taxi cabs there are no other forms of public transportation that serve Fort Sill. Lawton area residents rely on personally owned vehicles as their primary means of transportation to work. Only about 13.6 percent of post personnel participate in carpools (USACE, 2008).

4.19.6.2 Environmental Consequences

No Action Alternative

Fort Sill anticipates long-term minor impacts to traffic and transportation under the No Action Alternative. Traffic volume on post would not change and the number of Soldiers, civilians, and dependents utilizing the Fort Sill transportation system would remain at current levels. Minor delays at ACPs during peak traffic hours would continue. Overall, LOS on major roadways and access points would remain acceptable.

Alternative 1: Force Reduction (up to 4,700 Soldiers and Army Civilians)

Fort Sill anticipates long-term minor beneficial impacts to traffic and transportation as a result of the implementation of Alternative 1. Traffic volume on post would decrease due to a reduced number of government and POVs and a decreased number of Soldiers and dependents utilizing the Fort Sill and surrounding community transportation systems. Traffic volume in the local community would decrease to a minor extent. Minor delays at major ACPs would decrease in duration.

4.19.7 Cumulative Effects

Region of Influence

The ROI for this cumulative impact analysis of Army 2020 realignment at Fort Sill covers all of Comanche County in the state of Oklahoma. Lawton, Oklahoma is the largest city within the ROI and residents make-up approximately 78 percent of the county's total population. The economy within Lawton is primarily centered on government, manufacturing, and retail trade industries while the rest of Comanche County is primarily rural. Fort Sill and the Wichita Mountains National Wildlife Refuge cover approximately 22 percent of the total land area for Comanche County. Fort Sill has long been a key component of the area economy. Government related activities are responsible for half the counties gross domestic product. Fort Sill has been in operation supporting the Army since 1869.

There are numerous planned or proposed actions within the ROI that have the potential to cumulatively add impacts to Army 2020 alternatives. These actions are either in progress or reasonably could be initiated within the next 5 years. A number of the Army's proposed projects have been previously identified in the installation's Real Property Master Planning Board and are programmed for future execution. A list of projects below presents some of the projects

which may add to the cumulative impacts of the implementation of Army 2020 realignment alternatives.

Fort Sill Projects (Past, Present, and Reasonably Foreseeable)

Stationing

After an influx of personnel due to the 2005 BRAC, Fort Sill underwent a restructure which resulted in a decrease in approximately 900 permanent party personnel. Recent Army garrison management decisions have led to some reductions in the Army civilian employee population at Fort Sill.

Military Construction and Operations and Maintenance

Since 2005 Fort Sill has seen a multitude of construction actions, most notably:

- BRAC Infrastructure Projects and Air Defense Artillery Training Facilities;
- Child Development Centers;
- Barracks complexes and renovations;
- Dining Facilities;
- Warrior Transition Unit Complex;
- Fire and Movement Range;
- Infantry Squad Battle Course Range;
- Twenty-Five Meter Range;
- Modified Record Fire Range; and
- UAS Runway.

Future anticipated construction actions include:

- Central Issue Facility;
- Air Defense Artillery Training Support Facility;
- Physical Fitness Facility;
- Chapel Complex;
- Reception Complex;
- FIRES Brigade Complex;
- Rail Deployment Facility;
- Mission Command Training Center;
- Terminal High Altitude Area Defense Training Facility;
- Multi-Purpose Machine Gun Range; and
- Modified Record Fire Range.

Other Agency (DoD and non-DoD) and Other Public/Private Actions (Past, Present, and Reasonably Foreseeable)

Non-Army actions occurring on Fort Sill include the construction of a new AAFES Shoppette with carwash and a separate dual food facility. Also the construction of the Armed Forces Reserve Center was recently completed. Fort Sill's on-post housing was privatized in 2008. Currently a new addition is under construction which will result in 432 new homes.

Actions within Comanche County include ongoing Local Government include improvements to roads, bridges, parks, treatment facilities, and water systems. In addition, more than 12 new

housing developments and several apartment complexes have recently been constructed across the ROI. Many of the local school districts are constructing new schools and/or upgrading existing facilities. As presented in Table 4.19-3, military dependents make up a significant portion of these schools' populations.

Lawton, Oklahoma is the only metropolitan area within the ROI. FY 2012 capital improvements for the city include a downtown revitalization project which will feature a large shopping center, a hotel convention center, a sports complex, and other amenities to encourage downtown living and recreation. Other projects proposed by the city include expansion and construction at the Lawton landfill, improvements to the airfield, and a new fire house in the expanding far western part of town. The city has also recently approved the construction of a large box store shopping center on the far west side of town.

Other recent changes within the ROI include the closure of two major call centers, the cancellation of the non-line of sight cannon project, and a decrease in hiring on Fort Sill in both government civilian and contract positions.

4.19.7.1 Environmental Consequences

Fort Sill anticipates a range of cumulative effects resulting from the implementation of the Proposed Action and alternatives. Cumulative impacts for each alternative are as follows:

No Action Alternative

Beneficial through significant but mitigable adverse cumulative impacts would be anticipated under the No Action Alternative. No changes in military authorizations, or local environmental conditions would be anticipated. Installation facility shortages and excesses would remain at their currently planned levels without additional stationing or force reductions. The Army would continue to implement some facilities reductions of outdated/unused facilities. Under the No Action Alternative, cumulative impacts to air quality, airspace, soil erosion, biological resources, wetlands, water resources, facilities, socioeconomics, energy demand and generation, land use conflict and compatibility, hazardous materials and hazardous waste, and traffic and transportation would be minor. Cumulative impacts under the No Action Alternative that would be more than minor are cultural resources and noise. Further discussion of these cumulative effects are presented below.

Cultural Resources. Future construction actions, outside of the context of Army 2020 actions, would be considered to have a less than significant potential impact to existing cultural resources. Activities on post are managed by the Fort Sill Cultural Resources Office which consults with the Oklahoma SHPO and the local Native American Tribes on actions that could potentially impact eligible cultural sites. Other projects within the ROI, such as the housing development complexes and downtown revitalization, could also inadvertently impact cultural resources or affect historic structures. Cumulatively, however, impacts would remain less than significant.

Noise. Off-post construction activities would also contribute to noise impacts within the ROI, but overall impacts to Lawton and other communities would be less than significant. The Army would continue to mitigate the impacts of its training to less than significant levels through scheduling of training events.

Alternative 1: Force Reduction (up to 4,700 Soldiers and Army Civilians)

Cumulative impacts as a result of the implementation of Alternative 1 range from beneficial impacts to significant adverse impacts to socioeconomics. As a result of Alternative 1, the Army anticipates beneficial to minor adverse cumulative impacts to air quality, airspace, noise, soil

erosion, biological resources, wetlands, water resources, facilities, energy demand and generation, land use conflict and compatibility, and traffic and transportation.

Noise. Noise impacts within the ROI from construction of housing developments and other Army proposed projects would be off-set by the reduction in training noise as a result of this alternative. Cumulative impacts within the ROI would be minor and a net benefit to noise within the ROI would be anticipated.

As a result of Alternative 1, the Army anticipates more than minor cumulative adverse impacts to the following VECs.

Socioeconomics. Regionally, off-post unemployment has risen 3.9 percent within the ROI from January 2008 to January 2012 (USDL, 2012). Actions, such as the completion of BRAC construction projects, the drawdown of government workers, and the closure of two large call centers in Lawton, Oklahoma have contributed to a decline in employment within the ROI. Nationally, unemployment has been trending lower since 2010. In April 2010, the national unemployment rate was 9.9 percent and as of September 2012 it was reported as 7.8 percent (USDL, 2012). Under Alternative 1, the loss of 4,700 Soldiers and Army civilian employees in conjunction with other reasonably foreseeable proposals would have a significant adverse impact to employment, income, regional population, and state and local county tax revenues. A force reduction, coupled with the increase of on-post housing would reduce the need for ready off-post housing, thereby further impacting local housing markets and the need for developments currently in construction within the ROI. The number of Soldiers living off post would also decrease also adding to a decreased demand for off-post housing within the ROI.

Cultural Resources. Future construction actions, outside of the context of Army 2020 actions, would be considered to have a less than significant potential impact to existing cultural resources. Activities on post are managed by the Fort Sill Cultural Resources Office which consults with the Oklahoma SHPO and the local Native American Tribes on actions that could potentially impact eligible cultural sites. Other projects within the ROI, such as the housing development complexes and downtown revitalization, could also inadvertently impact cultural resources or affect historic structures. Cumulatively, however, when considering the potential impacts of facilities demolition as a result of the implementation of Alternative 1, impacts would be projected to be significant but mitigable.

Hazardous Materials and Hazardous Waste. Temporary less than significant cumulative impacts to hazardous waste volumes are anticipated within the ROI. Both the installation and other entities pursuing new development or demolition activities within the ROI would follow applicable federal and state hazardous material and waste storage and disposal procedures to minimize impacts and environmental risks.

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4.20 FORT STEWART, GEORGIA

4.20.1 Introduction

Fort Stewart, located in southeastern Georgia, consists of approximately 280,000 acres of military training lands and built infrastructure (Figure 4.20-1). The installation has long supported armored/mechanized unit training and dismounted infantry unit training. Hunter Army Airfield is a sub-installation of Fort Stewart located 40 miles to the northeast of the installation boundary. Any BCT stationing actions described would take place within Fort Stewart proper; therefore, potential impacts to Hunter Army Airfield are not discussed.

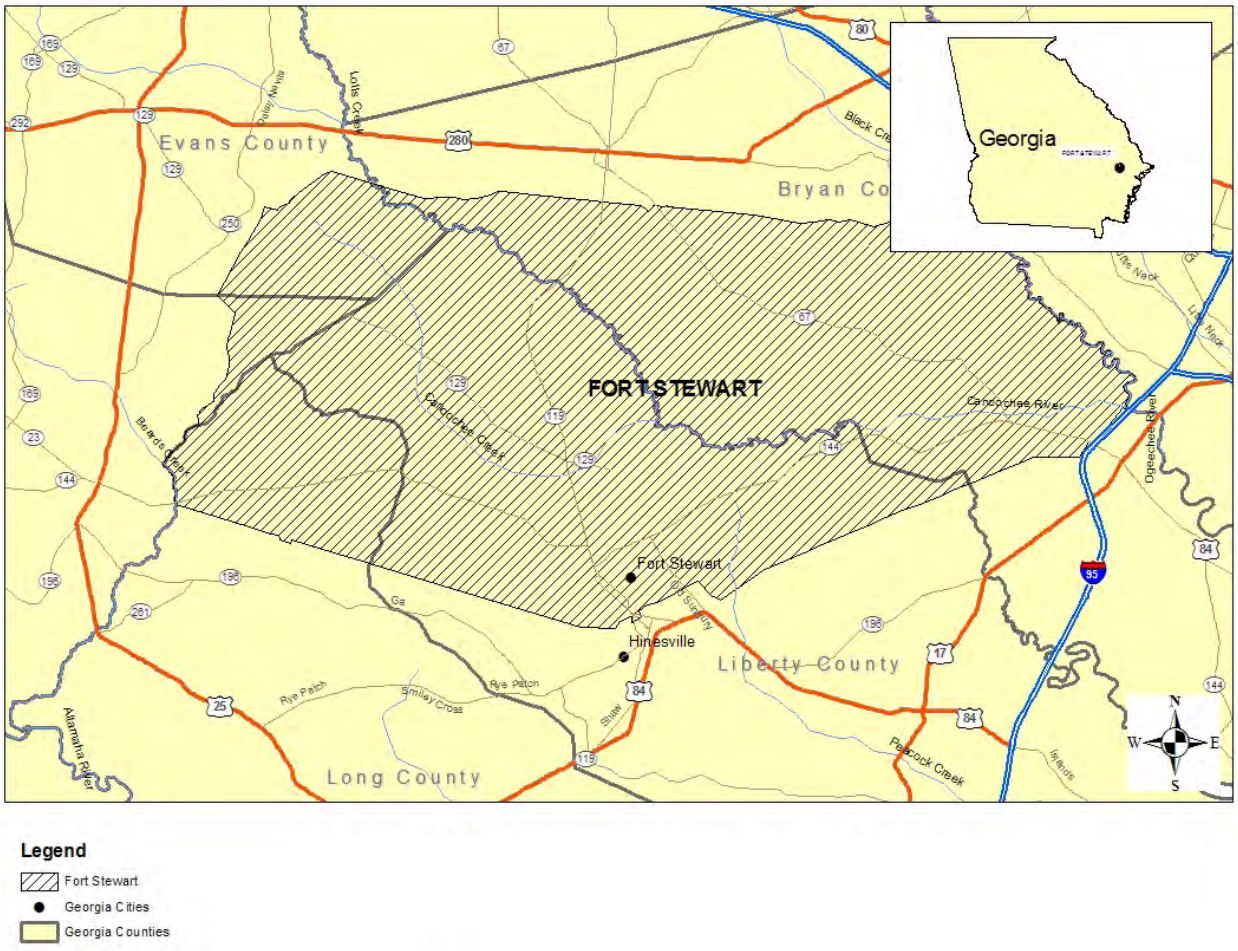

Figure 4.20-1. Fort Stewart

Major units of the 3rd Infantry Division, which is stationed at Fort Stewart, include two ABCTs, one IBCT (1/3, 1/3, 4/3 of the 3rd ID), a SUSBDE, combat support and service support units, and a CAB. Although the CAB is stationed at Hunter Army Airfield, it is discussed in this PEA in relation to the impacts of the CAB's training on Fort Stewart ranges and training lands. In addition to the resident units stationed at Fort Stewart, two to three Army Reserve or National Guard Brigades conduct their annual training on Fort Stewart each year.

Fort Stewart has a well-developed range and training land infrastructure that supports Abrams Tank, Bradley Fighting Vehicle, Aerial Gunnery, Artillery Live-Fire Training, other assorted live-fire training, maneuver training, individual, and team and collective tasks. Training land configuration allows for concurrent live-fire and maneuver training in separate sections of the

installation, each not interfering with the other. Coastal Georgia growth projections indicate that the current population would double in this region over the next 10 years. Fort Stewart works closely with multiple local communities to minimize potential conflicts with the military mission and reduce encroachment risks.

4.20.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, Fort Stewart does not anticipate any significant adverse environmental impacts as a result of the implementation of Alternative 1 (Force reduction of up to 8,000 Soldiers and Army Civilians) or Alternative 2 (Installation gain of up to 3,000 Soldiers). Fort Stewart does anticipate a significant adverse socioeconomic impacts to economic activity including significant impacts to sales volume, income, employment, and population as a result of the implementation of Alternative 1. Under Alternative 2, Fort Stewart would experience a significant increase in population within the ROI. Table 4.20-1 summarizes the anticipated impacts to VECs from each alternative.

Table 4.20-1. Fort Stewart Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 8,000	Alternative 2: Growth of up to 3,000
Air Quality	Minor	Beneficial	Minor
Airspace	Minor	Negligible	Minor
Cultural Resources	Negligible	Minor	Minor
Noise	Negligible	Beneficial	Minor
Soil Erosion	Minor	Negligible	Less than Significant
Biological Resources	Negligible	Beneficial	Minor
Wetlands	Minor	Beneficial	Minor
Water Resources	Minor	Negligible	Minor
Facilities	Negligible	Minor	Less than Significant
Socioeconomics	Negligible	Significant	Beneficial
Energy Demand and Generation	Negligible	Beneficial	Minor
Land Use Conflict and Compatibility	Negligible	Beneficial	Minor
Hazardous Materials and Hazardous Waste	Negligible	Minor	Minor
Traffic and Transportation	Minor	Beneficial	Less than Significant

4.20.2 Air Quality

4.20.2.1 Affected Environment

The ROI for Fort Stewart includes portions of five counties—Bryan, Evans, Liberty, Long, and Tattnall. The City of Hinesville and Liberty County are adjacent to the cantonment area along the southern boundary of the post. The City of Pembroke and Bryan County border Fort Stewart

to the north. The cities of Glennville and Richmond Hill lie to the west and east of post boundaries, respectively. The bordering counties are in attainment for EPA's NAAQS.

Fort Stewart is a major source of air pollutants and maintains a Title V Operating permit. Primary stationary sources include boilers, generators, fuel storage and dispensing areas, and surface coating operations. Since Fort Stewart is located in attainment areas there is no requirement to conduct a conformity analysis. The CAA's PSD requirements are not anticipated to be triggered by the installation's activities.

4.20.2.2 Environmental Consequences

No Action Alternative

No change to the type or the frequency of training events would occur. Although there would continue to be minor short- and long-term fugitive dust impacts from training, these impacts would not exceed threshold levels. Permit conditions would continue to be monitored and met, but no changes to or increases in emission sources are anticipated, other than those mandated by maintenance, replacement, or elimination of sources as they age and/or are removed from service.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

The implementation of Alternative 1 would have an anticipated beneficial impact to air quality resulting from the reduction in unit training events and the accompanying reduction in stationary and mobile emission sources. Conditions identified in air permits would continue to be monitored and may require changes as a result of this alternative. Specifically, the permit may require modification to reflect the lowered emission levels resulting from less combustion and generation of NAAQS pollutants and HAPs associated with the reduction in the number of Soldiers engaged in military training. In addition, there would be less fugitive dust generated from fewer unit training events.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

The implementation of Alternative 2 would have an anticipated minor impact on air quality. An increase in emissions from mobile and stationary sources would result from the stationing of additional Soldiers and their Families. The increased HAPs, CAPs, emissions, and fugitive dust would be derived from military vehicles and generators supporting training events, but would not cause Fort Stewart to exceed the limits of its Title V permit or cause any change in its attainment status. This determination was made in 2008 studies carried out to analyze Fort Stewart's potential for the stationing of a BCT, which would have placed approximately 3,400 additional Soldiers at Fort Stewart (Fort Stewart, 2008a). These studies indicated the installation could support the action with minimal impacts to air quality. That additional BCT was not stationed at Fort Stewart.

4.20.3 Airspace

4.20.3.1 Affected Environment

Fort Stewart has 386 square miles of FAA-designated SUA, from the ground surface to 29,000 feet above MSL. The installation may activate the restricted airspace from 0600 to 2400 local daily for area R3005 A, B, D, E; and 0600 to 0300 local daily for area R3005 C, with other times available by Notice to Airmen 24 hours in advance (Fort Stewart, 2005). In addition, by Letter of Agreement, R3005 A-E may be activated to 45,000 feet with 48 hour advance notice to FAA Jacksonville Center.

4.20.3.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative would not produce any conflicts with overlying restricted airspace, as no proposed change to existing conditions would occur.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

The implementation of Alternative 1 would have negligible impacts to airspace. The installation would require less activation of the SUA in support of live-fire training activities. Aviation and UAS units would continue to require airspace to support training, but at a lower utilization level. Fort Stewart's training activities would still require the activation of the existing SUA but with less frequency.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

The implementation of Alternative 2 would have an anticipated minor adverse impact to airspace. The number and type of aircraft utilizing the SUA would not change substantially from the existing condition and additional airspace would not be required to support the additional ground units; however, implementation of Alternative 2 would result in an increase in scheduling, activation, and utilization of the existing SUA. The increased operations could cause some minor impacts to air traffic flow within the National Airspace System around Fort Stewart. Adhering to the existing airspace management and scheduling operations should minimize potential conflicts and impacts, despite additional time and use demands for the SUA.

4.20.4 Cultural Resources

4.20.4.1 Affected Environment

The affected environment for Fort Stewart encompasses the legal boundaries of the installation. The Fort Stewart region has been occupied for at least 12,000 years by Native Americans, Europeans, and the military (Fort Stewart, 2008b). Most prehistoric sites at Fort Stewart consist of habitation sites, base camps, small villages, seasonal use camps, hunting stations, and isolated artifact scatters. Most historic period sites at Fort Stewart consist of homesites, agri-industrial related activities, naval stores production and collection sites, and isolated artifact scatters.

Approximately 175,000 of the 280,000 acres of Fort Stewart have been surveyed for cultural resources (Fort Stewart, 2008b). As a result of these archaeological surveys, 3,608 archaeological sites have been recorded at Fort Stewart, of which 43 have been recommend eligible and 162 potentially eligible for the NRHP. In addition to these archaeological sites, 60 historic period cemeteries, one sacred site (Lewis Mound) and two TCPs (Taylors Creek and Pleasant Grove Cemeteries) have been identified. Regarding historic buildings and structures, Fort Stewart has conducted an entire survey and evaluation of all buildings and structures built before 1990 (to include Cold War Era buildings eligible under Criteria G of the NRHP). As a result of this building survey, five buildings that have been determined eligible for the NRHP have been identified at Fort Stewart (Glisson's Mill Pond Store and four Fire Towers). Each year, as buildings approach the 45 year mark, they are reassessed for eligibility.

A revised Programmatic Agreement between the 3rd Infantry Division (Mechanized), Fort Stewart, and the SHPO was executed in 2011 and provides a streamlined process for Section 106 of the NHPA compliance by the Army at Fort Stewart (Fort Stewart, 2008b). The Programmatic Agreement states that Fort Stewart will conduct archaeological surveys (if not previously conducted) to identify any historic properties that could be affected by a project,

activity, or undertaking. It also provides a listing of undertakings excluded from evaluation under Section 106 (e.g., undertakings in severely disturbed special use and bivouac areas, most areas within the cantonment, and impact areas that are highly likely to be contaminated with UXO). For all undertakings that are determined by cultural resource staff to have no adverse impacts upon historic properties, individual consultations with the SHPO is not required. If the undertaking has the potential to adversely affect historic properties, consultation per 36 CFR 800 is required. The revised Programmatic Agreement also reduces the requirement for archaeological surveys within areas of low potential for cultural resources that also contain elevated risk of UXO.

4.20.4.2 Environmental Consequences

No Action Alternative

Impacts to cultural resources under the No Action Alternative would be negligible. Activities with the potential to affect cultural resources are monitored and regulated when anticipated through a variety of preventative and minimization measures.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

The implementation of Alternative 1 would have an anticipated minor adverse impact to cultural resources. Removal of temporary facilities vacated by departing units would have a very low potential for adverse impacts to archeological resources due to the minimal amount of ground disturbance associated with such actions. Removal of outdated and under-utilized infrastructure has the potential to affect historic structures, but would be conducted in accordance with the current Programmatic Agreement. If an undertaking does not fall within the Programmatic Agreement and has the potential to adversely affect historic properties, consultation with the SHPO would occur, per 36 CFR 800, as required. Currently, few historic structures have not been previously mitigated for future demolition and modification via the Programmatic Agreement, stand-alone and group Memorandum of Agreements, Memorandum of Understandings, or other installation/SHPO agreements. Thus, there is a low potential for potentially eligible historic structures to be adversely affected as a result of this action.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

The implementation of Alternative 2 would have minor impacts to cultural resources. Measures are in place to accommodate training while minimizing potential adverse impacts to cultural resources. The types of training conducted by the additional Soldiers would not change, although some training areas on Fort Stewart might experience more frequent or intense use compared with current baseline conditions. The Programmatic Agreement addresses consultation requirements for anticipated training impacts, and Fort Stewart would continue to follow these procedures. Large portions of Fort Stewart are forested and require the use of tank trails and low water crossings. Impacts to cultural resources from mounted vehicular training or from off-road or foot traffic in these locations is unlikely, as this type of training is only conducted in select training areas. Increased use of established ranges, however, has the potential to lead to the loss of some cultural resources through associated small-scale ground disturbance.

Under the terms of the revised Fort Stewart Programmatic Agreement, "routine cross-country passage of all military field vehicles" is exempt from Section 106 Review. This does not, however, exempt protection of known NRHP-eligible sites and/or cemeteries that may be affected by this action. Fort Stewart employs one or more of the following protective measures: fencing, signage, painted boundaries, and seibert stakes, all of which are identified through various military/civilian training opportunities, media outlets, and posting of appropriate notices. As a result, impacts from cross-country maneuver are anticipated to be negligible.

Any increase in training has the potential to further-limit access to the installation's 60 historic cemeteries, two of which are TCPs, and all of which are routinely visited by the public. It would not be anticipated that historic buildings would need to be demolished or reconfigured to accommodate more Soldiers as a result of this alternative.

4.20.5 Noise

4.20.5.1 Affected Environment

According to the 2005 JLUS all noise generated from small arms weapons fire is effectively contained on installation lands and maneuver areas and thus, do not pose compatibility issues with off-post residential communities (Fort Stewart, 2005). Noise associated with LUPZ is experienced at off-post locations (and sometimes can cause annoyance in these areas) affecting the City of Pembroke and Bryan County to the north and the City of Hinesville and Liberty County to the south. NZ II, which on Fort Stewart is caused by large caliber weapons firing, extends beyond the installation boundary and north into Bryan County. NZ III is fully contained within the installation, and maneuver noise is not currently an issue with respect to local communities (Fort Stewart, 2005).

4.20.5.2 Environmental Consequences

No Action Alternative

Negligible impacts from noise are anticipated under the No Action Alternative. The acoustic environment of Fort Stewart would continue to be affected by small- and large-caliber weaponry, artillery, and aircraft over-flight. Other activities, such as ground maneuver training and exercises resulting in noise created by personnel and vehicles, would continue to contribute noise on Fort Stewart, to the same levels and intensity as historically experienced.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

The implementation of Alternative 1 would have an anticipated beneficial impact to the noise environment, with a reduction in the frequency of noise-generating events. Existing ranges would still be utilized for firing the same types of weapons systems and conducting the same types of training. Fort Stewart's remaining BCTs would also continue to conduct maneuver and live-fire training in the field; however, there would be a reduction in the frequency of noise generating training events, which would be reduced roughly in proportion to the decrease in the number of Soldiers stationed at the installation. A reduction of up to 8,000 Soldiers would not change the intensity or type of noise-generating activities. With less frequent firing events there would be an anticipated reduction in the potential for noise complaints from the public and community residents that live in areas bordering the installation. Aviation units on Fort Stewart would not be impacted by these decisions; therefore, the current frequency and training activities of aviation units, a major contributor of noise at the installation, would not be anticipated to change.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

The implementation of Alternative 2 would have an anticipated minor impact on the noise environment on the installation and surrounding communities due to the stationing of up to 3,000 Combat/Combat Support Soldiers. Noise modeling conducted in 2008 (in anticipation of potentially acquiring a new BCT of 3,400 Soldiers) indicated that additional stationing would not result in major changes to noise levels for sensitive receptor populations. Given that there are no new types of activities that would occur as a result of stationing under Alternative 2, just an increase in the frequency of existing noise generating activities, only minor impacts are anticipated to occur as a result of implementing this alternative.

4.20.6 Soil Erosion

4.20.6.1 Affected Environment

Fort Stewart is a relatively flat, coastal landscape predominantly made up of poorly drained loamy sand and sandy soil, riparian, and other wetland areas. The principal cause of soil erosion is from maneuver of tracked and wheeled vehicles on already disturbed range areas; however, over the past decade, Fort Stewart has constructed many low water crossings to reduce impacts on ranges where vehicles have historically traversed streams and wetland areas on traditional dirt tank trails. Fort Stewart has many mapped wetland areas crucial for training for potential low water crossings. Fort Stewart has also implemented road infrastructure improvements that have addressed erosion and flooding issues in the training area, which has improved maneuverability and access to ranges.

4.20.6.2 Environmental Consequences

No Action Alternative

Minor adverse impacts are anticipated under the No Action Alternative. Fort Stewart would continue its infantry and mechanized training, to include impacts to soils from removal of or damage to vegetation, digging activities, ground disturbance from vehicles, and ammunition or explosives used in training events. The installation's ITAM program conducts monitoring, rehabilitation, and maintenance and repair on areas of high use such as drop zones, artillery firing positions, observation points, and ranges.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

The implementation of Alternative 1 would have an anticipated negligible and potentially beneficial long-term impact to soils. This alternative includes the demolition of vacated facilities no longer needed, for which no other user can be identified. Demolition of facilities could result in short-term adverse impacts to soils from the temporary exposure of bare soils to rain, water, and wind erosion; however, soils would be stabilized with seeds, matting, and other erosion control measures following demolition. BMPs for construction and demolition would also be utilized to stabilize soils and prevent soil erosion on work sites. Overall, there would be anticipated beneficial long-term impacts to soils from reduced training levels. A reduction in training would provide more opportunities for land rehabilitation efforts and natural rest and recovery of the landscape. This would further aid in the lessening of soil erosion and sedimentation.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

The implementation of Alternative 2 would have an anticipated less than significant impact to soils. Construction to facilitate the additional Soldiers would be required. Construction would result in temporary, minor adverse impacts to soils from land clearing and site leveling. Exposed soils would become more susceptible to erosion, and declines in soil productivity (i.e., the capacity of the soil to produce vegetative biomass). Training of the additional ground units would also increase soil impacts and surface disturbance from unit maneuvers. With the potential addition of another maneuver battalion, engineer units and other support units to a BCT, more vehicles would impact roads in Fort Stewart's training areas and maneuver corridors; therefore, a greater amount of sedimentation would be anticipated to occur in the regional surface waters. Fort Stewart's ITAM program would continue to monitor training lands for disturbance, and would plan and implement rehabilitation and erosion control measures in areas of high use.

4.20.7 Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species)

4.20.7.1 Affected Environment

Fort Stewart is home to 10 special status plant species and 21 special status fauna species (Fort Stewart, 2007). Among these species, six ESA-listed fauna species are currently recorded as occurring on the installation. Table 4.20-2 lists the threatened or endangered species found on Fort Stewart.

Table 4.20-2. Threatened or Endangered Species Found On Fort Stewart Federally-Listed or Listed by the State of Georgia

Common Name	Scientific Name	Federal Status	Georgia State Status
Plants			
Purple honeycomb head	*Baldunia atropurpurea*	-	Rare
Georgia plume	*Elliottia racemosa*	-	Threatened
Green-fly orchid	*Epidendrum magnolia*	-	Unusual
Dwarf witch-alder	*Fothergilla gardenia*	-	Threatened
Michaux's spider orchid	*Habenaria quinqueseta*	-	Threatened
Pond spice	*Litsea aestivalis*	-	Rare
Crestless plume orchid	*Pteroglossaspis ecristata*	-	Threatened
Hooded pitcher plant	*Sarracenia minor*	-	Unusual
Swamp buckthorn	*Sideroxylon thornei*	-	Rare
Silky camellia	*Stewartia malacodendron*	-	Rare
Mammals			
Rafinesque's big-eared bat	*Corynorhinus rafinesquii*	-	Rare
West Indian manatee	*Trichechus manatus*	Endangered	Endangered
Birds			
Bachman's sparrow	*Aimophila aestivalis*	-	Rare
Bald eagle	*Haliaeetus leucocephalus*[1]	*	Threatened
Wood stork	*Mycteria americana*	Endangered	Endangered
Red-cockaded woodpecker	*Picoides borealis*	Endangered	Endangered
Swallow-tailed kite	*Elanoides forficatus*	-	Rare
Peregrine falcon	*Falco peregrinus*	-	Rare
Southeastern kestrel	*Falco sparverius paulus*	-	Rare
Least tern	*Sterna antillarum*	-	Rare
Reptiles and Amphibians			
Frosted flatwoods salamander	*Ambystoma cingulatum*	Threatened	Threatened
Spotted turtle	*Clemmys guttata*	-	Unusual
Eastern indigo snake	*Drymarchon couperi*	Threatened	Threatened
Gopher tortoise	*Gopherus polyphemus*	Candidate	Threatened
Southern hognose snake	*Heterodon simus*	-	Threatened
Diamondback terrapin	*Malaclemys terrapin*	-	Unusual
Striped newt	*Notophthalmus perstriatus*	Candidate	Threatened

Common Name	Scientific Name	Federal Status	Georgia State Status
Mimic glass lizard	*Ophisaurus mimicus*	-	Rare
Gopher frog	*Rana capito*	-	Rare
Fish			
Shortnose sturgeon	*Acipenser brevirostrum*	Endangered	Endangered
Invertebrates			
Say's spiketail	*Cordulegaster sayi*	-	Threatened

[1]As of 8 August 2007, the Bald Eagle is no longer afforded protection under the ESA; however, it is protected under the Bald and Golden Eagle Protection Act (Eagle Act) and the MBTA. The Eagle Act is the primary law protecting eagles and protection is very similar to the ESA.

Fort Stewart has an active forestry program, one of the largest in DoD. The forestry program is responsible for timber thinning operations and regular application of prescribed fire on live-fire ranges and training lands. The installation contains Georgia's largest remaining stand of longleaf pine forest.

4.20.7.2 Environmental Consequences

No Action Alternative

Negligible adverse impacts would occur at Fort Stewart under the No Action Alternative. Fort Stewart would continue to adhere to its existing resource management plans and to further minimize and monitor any potential impacts. Units are briefed prior to each training event regarding sensitive areas on post, such as protected species habitat, and what is and is not allowed within certain areas, such as within the protective buffer surrounding individual RCW cavity trees. Historical use of training areas and ranges indicate unit compliance with these restrictions and continued compliance is anticipated. Range capabilities and timber management activities on Fort Stewart are ongoing and would continue under the No Action Alternative in accordance with the installation's timber harvest priority list. Most prescribed harvest activities are thinnings carried out to support troop training, endangered species management, and forest health.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

The implementation of Alternative 1 would have an anticipated beneficial impact to biological resources. Scheduling conflicts for training area access to conduct resource monitoring and management activities would be reduced. Proactive conservation management practices (e.g., application of prescribed fire, restoration of longleaf pine-wiregrass ecosystems) would be more easily accomplished with reduced scheduling of training activities.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

The implementation of Alternative 2 would have minor adverse impacts to biological resources. The potential increase in the number of Soldiers would be less than 20 percent above current stationing levels. While this moderate force augmentation would increase traffic in the training lands and ranges, it would not cause significant degradation or destruction of threatened or endangered species or rare species habitats. Fort Stewart proactively manages its conservation programs within the installation's training areas; however, access to training lands and ranges for the purpose of threatened or endangered species monitoring and habitat management would become more difficult with increased throughput. Access is essential to conduct management actions (prescribed burning, etc.) and to conduct monitoring in order to

demonstrate that populations of threatened or endangered species are stable or increasing. Range managers and natural resource management staff would more closely coordinate access to training areas for species management activities to ensure adequate access is obtained. The anticipated effects of gaining up to 3,000 Soldiers would be minor as these Soldiers would train in the same manner as Soldiers currently stationed on Fort Stewart, though frequency of training would increase. Fort Stewart would continue to ensure that management and monitoring activities are conducted even if training activities must be adjusted.

4.20.8 Wetlands

4.20.8.1 Affected Environment

Fort Stewart contains approximately 91,000 acres of wetlands spread across 280,000 acres. Wetlands on Fort Stewart are generally high functioning with healthy communities of hydrophytic vegetation that are found throughout the installation. Wetlands on Fort Stewart support populations of aquatic, semi-aquatic, and terrestrial animals, including some of the threatened and endangered species in Table 4.20-2 (Fort Stewart, 2007). Fort Stewart has implemented an aggressive mitigation program in order to offset wetland impacts. These projects include wetland enhancement and wetland restoration projects on large-scale areas that provide higher quality mitigation than smaller patchwork single permit mitigation products (Fort Stewart, 2007). Fort Stewart also maintains a proactive program to identify and remedy problematic points of impaired hydrology, severe siltation, and other threats to water quality in wetlands and natural waterways.

4.20.8.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative would have a minor adverse impact to wetlands on Fort Stewart. Wetlands impacts from projects already under construction (or for which NEPA is complete and construction pending) have been assessed and, if required, appropriate mitigation and permitting have occurred. Additionally, training, personnel operations, and routine maintenance and monitoring activities on Fort Stewart would continue to occur, resulting in minimal impacts to wetlands. Impacts are minimized by BMPs and regular maintenance of roads, ranges, training lands, and developed areas. Vehicle traffic through wetlands is restricted and activities in wetland restoration areas are monitored to ensure restoration is not compromised.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

The implementation of Alternative 1 would have an anticipated beneficial impact to wetlands. A reduction in force at Fort Stewart would mean tank roads, ranges, and training areas would be less utilized. Construction projects carrying unavoidable wetland impacts would also be fewer. Less vegetation would be denuded and less sediment would run off into wetlands to impair their ecological function. As such, the loss or degradation of wetland systems would occur less frequently or to a decreased extent.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

The implementation of Alternative 2 would have a minor impact to wetlands. Training activities in areas adjacent to wetlands would increase, resulting in an increased potential for erosion and sedimentation into wetlands located along existing roads, ranges, and maneuver lands. An increase in construction would also occur, resulting in a probable increase of unavoidable wetland impacts. If it appears that wetland impacts are unavoidable, the appropriate level of permitting and mitigation would be obtained prior to the training event or construction action.

4.20.9 Water Resources

4.20.9.1 Affected Environment

Surface Water. Four watersheds occur within Fort Stewart's boundaries: the Altamaha, Canoochee, Lower Ogeechee and Ogeechee Coastal watersheds. Most of Fort Stewart is in the Canoochee River watershed. The Canoochee River traverses from the northwest corner to the eastern side of the installation with about 30 miles of the river located inside Fort Stewart's boundary. The installation has about 265 miles of freshwater rivers and streams and an additional 12 miles of brackish water systems. Existing impairments to surface water quality include both point sources and nonpoint sources. The most common point sources are municipal or industrial activities and WWTPs. The NPDES permit, required under the Georgia Water Quality Act and Georgia Erosion and Sedimentation Control Act, regulates the discharge of point source pollutants from industrial activities and construction projects within both the garrison and training areas. Nonpoint sources in the region include stormwater runoff from urban areas, agricultural, construction, range training activities, golf course irrigation, and forest timber harvesting. The Georgia NPDES MS4 permit regulates the nonpoint source discharges.

Water Supply. Fort Stewart obtains its potable water from groundwater within the Floridan aquifer. The Georgia Department of Natural Resources Environmental Protection Division has identified Fort Stewart as one of the top ten water users in the southeastern region of Georgia (Fort Stewart, 2007). Fort Stewart is implementing water conservation measures, to reduce water withdrawals; however, this is being done strictly as a conservation measure and not due to a dwindling of aquifer capacity or permitted withdrawal capacity. Fort Stewart has an adequate withdrawal capacity to support additional growth.

Wastewater Treatment. The installation is tied into and utilizes the Hinesville WWTP. The Hinesville WWTP will be upgraded to handle additional capacity in 2013, while also meeting reduced NPDES permit limits set by the Georgia Environmental Protection Division.

4.20.9.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative would have minor adverse impacts to water resources. No change from existing conditions would occur and all construction, operation, and maintenance projects already under way have obtained the NPDES permit and other applicable permits and are operating in adherence to their guidance. Training activities would continue, both on ranges and training lands, with adverse impacts mitigated via the ITAM land rehabilitation program.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

The implementation of Alternative 1 would have an anticipated beneficial impact to water resources. A loss of up to 8,000 Soldiers would reduce traffic in Fort Stewart's training areas, roads, and ranges, decreasing the chance of potential surface water impacts. The demand for potable water would also be diminished, and as a result of the implementation of Alternative 1 would create additional treated wastewater capacity for other uses at the installation.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

The implementation of Alternative 2 would have an anticipated minor impact to water resources, as discussed below.

Surface Water. Minor construction would occur as a result of this alternative, and its potential impacts managed through adherence to existing NPDES and other permits. An increase in training would result in an accompanying increase in the frequency and intensity of usage of

existing road, trail, and training areas. This could lead to increased sedimentation and surface water impacts attributable to soils compaction, increased vegetation loss, and increased sheet flow during rain events. Implementation of existing ITAM land rehabilitation measures would prevent these potential impacts from reaching a level of significance.

Water Supply. Potable water capacity at Fort Stewart is approximately 4.99 mgd and the estimated existing level of use is 2.7 mgd, leaving 2.3 mgd in excess. Based on the average of 100 gpd of potable water use per person it is anticipated that up to 3,000 additional Soldiers would increase potable water demand by up to approximately 300,000 gpd, a demand well within the 2.3 mgd potable water excess. Even when considering the water consumption of all dependents that could accompany these Soldiers, and a total consumption of another 456,000 gpd if they were all to live on post, there would still be adequate water supply. As such, this level of growth would not adversely impact Fort Stewart's water supply. Fort Stewart is currently using only approximately 50 percent of its water supply and is currently implementing water resource conservation measures to consume less potable water and to ensure adequate resources in the future.

Wastewater Treatment. Fort Stewart is allocated 3.79 mgd of wastewater and plans to expand its wastewater treatment capacity in 2013. Current use is 2.15 mgd, which would allow for an additional 1.35 mgd to be treated. Based on an average daily use of 109 gpd per person, it is anticipated that an increase of up to 3,000 Soldiers and their Family members would increase wastewater influx by a maximum of 824,000 gpd, well within the permitted limits and not exceeding the WWTP's treatment capacity.

4.20.10 Facilities

4.20.10.1 Affected Environment

Fort Stewart has a well-developed cantonment area with barracks, motorpools, administrative buildings, and gymnasiums, among other facility types. Housing facilities are provided through the RCI, using both public and private funding to meet Army housing requirements. Fort Stewart training facilities includes a well-developed range infrastructure.

4.20.10.2 Environmental Consequences

No Action Alternative

Impacts to facilities would be negligible under the No Action Alternative. Fort Stewart's current facility shortfalls have been prioritized and are seeking or have received Army funding. The installation would continue to implement the Army's FRP at Fort Stewart. Environmental analyses of the projects that result from these programs are conducted prior to implementation.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

The implementation of Alternative 1 would have an anticipated minor impact on facilities. An increase in the FRP and facilities demolition at Fort Stewart would occur as a result of the implementation of Alternative 1. Older, less efficient facilities nearing the end of their life-cycle would be demolished to save the Army money on maintenance and energy requirements. Facility usage and availability for the remaining population would not be affected.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

The implementation of Alternative 2 would have an anticipated less than significant impacts to facilities. Increased Soldier strength of up to 3,000 would be reflected through increased usage throughout the cantonment area. The Real Property Master Plan would require modifications to allow for implementation of this alternative. Some additional construction of facilities would be

needed to support new Soldiers stationed at Fort Stewart. Some of these facilities would include a battalion headquarters facility, company operations facility, motorpool, and barracks. These facilities have been identified as garrison facility shortfalls by installation master planners. An assessment of range infrastructure availability to support additional Soldiers would also be needed, and the results of this assessment included in the next iteration of the Real Property Master Plan. Housing shortfalls would mean that many of the additional Soldiers would need to live in off-post housing.

4.20.11 Socioeconomics

4.20.11.1 Affected Environment

Fort Stewart is located primarily in Liberty County and Bryan County, but also extends into smaller portions of Evans, Long, and Tattnall counties. Fort Stewart Military Reservation includes approximately 280,000 acres, making it the largest military installation in the eastern U.S. The ROI consists of Liberty, Bryan, Evans, Long, and Tattnall counties.

Liberty County, which contains the City of Hinesville adjacent to the installation, is the county that would be most affected by Army stationing actions. Fort Stewart's population and workforce have long been an essential element of the demography and economy of Liberty County. Socioeconomic impacts may be felt to a lesser extent within the counties of Tattnall, Bryan, Long, and Evans; this lesser impact is anticipated due to their distance from the main cantonment area.

Population and Demographics. The Fort Stewart population is measured in three different ways. The daily working population is 18,647, and consists of full-time Soldiers and Army civilians working on post. The population that lives on Fort Stewart consists of 9,028 Soldiers and an estimated 8,335 dependents, for a total resident population of 17,363. Finally, the portion of the ROI population related to Fort Stewart is 24,240 and consists of Soldiers, civilian employees, and their dependents living off post.

The ROI county population is approximately 146,000. Compared to 2000, the 2010 population increased in Liberty, Bryan, Evans, Long, and Tattnall counties (Table 4.20-3). The racial and ethnic composition of the ROI is presented in Table 4.20-4.

Table 4.20-3. Population and Demographics

Region of Influence Counties	Population 2010	Population Change 2000-2010 (Percent)
Liberty	65,000	+ 3.0
Bryan	30,000	+ 29.1
Evans	11,000	+ 4.8
Long	15,000	+ 40.4
Tattnall	25,000	+ 14.4

Table 4.20-4. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Georgia	56	30	3	9	<1	2	<1
Liberty	43	41	0	10	2	3	1
Bryan	78	14	0	4	2	2	0
Evans	59	29	0	13	1	1	10
Long	62	25	0	12	0	1	0
Tattnall	60	29	0	10	0	1	0

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased in Liberty, Bryan, Evans, and Long counties. Employment decreased in the State of Georgia and Tattnall County between 2000 and 2009 (Table 4.20-5). Employment, median home value and household income, and poverty level data are presented in Table 4.20-5.

Table 4.20-5. Employment, Housing, and Income

State and Region of Influence Counties	2009 Total Nonfarm Employment (Employees)	Employment Change 2000-2009 (Percent)	Median Home Value 2005-2009 (Dollars)	Median Household Income 2009 (Dollars)	Population Below Poverty Level 2009 (Percent)
Georgia	3,410,505	- 2.1	160,100	47,469	16.60
Liberty	13,049	+ 37.5	110,000	41,275	17.30
Bryan	5,710	+ 81.2	180,800	58,092	12.10
Evans	3,771	+ 4.4	81,000	30,513	27.90
Long	385	+ 75.0	80,800	37,358	23.00
Tattnall	2,698	- 10.9	77,300	31,894	27.60

Schools. According to the 2010 Fort Stewart Command Data Summary, Fort Stewart educated 606 students in grades kindergarten through 6th grade in on-post DoD schools, while 4,188 students in those grades attended off-post schools within Liberty, Long, Evans, and Bryan counties (no students attended schools in Tattnall County). DoD schools on post include Brittin Elementary, Diamond Elementary, and Kessler Elementary Schools. Fort Stewart sends students in grades 7-8 off post to Midway Middle School, located about 10 miles away from Fort Stewart and Hinesville. All students in grades 9-12 attend local high schools off post. The U.S. Department of Education administers federal funding to these off-post schools via the Federal School Impact Aid program. This program was established in 1950 to assist local school districts that have lost property tax revenue due to the presence of tax-exempt federal property, such as Fort Stewart, or that have experienced increased expenditures due to the enrollment of federally-connected children. This aid resulted in Liberty, Long, Evans, and Bryan counties receiving Federal School Impact Aid funds totaling just over $10.75 million in 2010.

Public Health and Safety Services

On post, the Directorate of Emergency Services commands the Military Police Units, the Fort Stewart Fire Department, and the Post Safety Office. This directorate ensures unity of effort among Fort Stewart emergency services to provide a safe and secure environment within which to work, train, live, and play. They consist of the following:

- **Law Enforcement Services.** The Fort Stewart Military Police oversee police operations, patrol installation property, provide ACP/gate protect life and property, conduct investigations, regulate traffic, provide crowd control, and perform other public safety duties. City, county, and state police departments provide law enforcement in the ROI.
- **Fire and Emergency Services**. The Fort Stewart Fire Department responds to emergencies involving structures, facilities, transportation equipment, hazardous materials, and natural and man-made disasters, and directs fire prevention activities; and conducts public education programs. Fire prevention is another service provided and includes providing fire safety advice and insuring that structures are equipped with adequate fire precautions to ensure that in the event of fire, people can safely evacuate the premises unharmed.
- ***Health Facilities/Services.*** Winn Army Community Hospital and Lloyd C. Hawks Troop Medical Hospital services include audiology/speech pathology, dermatology, dietetics, emergency services, family medicine, internal medicine, obstetrics, occupational therapy, ophthalmology, optometry, orthopedics, otolaryngology, pediatrics, physical therapy, psychiatry, surgery, podiatry, psychology, social work, and substance abuse. Clinics provide health services for Active Duty and retired military personnel and their Families on Fort Stewart. Dental services are also available at three dental clinics on post. These facilities service all Active Duty personnel and their dependents, as well as retirees and their dependents. Off post, Liberty Regional Medical Center in Hinesville provides the nearest health care facility (Fort Stewart, 2008b).

Family Support Services. The FMWR provides a wide range of facilities for promoting social and emotional well-being of military/civilian service personnel and their Families. The Fort Stewart ACS office within FMWR assists in maintaining the readiness of individuals, Families, and communities within the Army by developing, coordinating, and delivering services which promote self-reliance, resiliency, and stability during war and peace. Services are offered to Active, Retired, Army Reserve and National Guard Soldiers and their Families members, regardless of branch services, as well as, as DoD civilian employees and their Family members. Programs offered include the Army Family Action Plan, Family Advocacy Program, Survivor Outreach Service, and Warriors in Transition.

Public Recreation Services. Recreational resources on Fort Stewart are managed by the FMWR and include areas for swimming, boating, hiking, hunting, and fishing. Fort Stewart has allowed the public access to installation lands for hunting and fishing since 1959. In general, any hunting or fishing area not closed for military use is open to the public with appropriate permits and restrictions. Access is denied to specific areas when safety or security concerns exist, prescribed burning is under way, or natural resources do not support such usage. About 1,500 to 2,000 people have permits to hunt at Fort Stewart, and they make 40,000 to 50,000 hunting trips annually. About 3,000 to 4,000 people hold a fishing permit, and they make 60,000 to 80,000 fishing trips annually.

Environmental Justice. Environmental justice analysis is prescribed by E.O. 12898, "Federal Actions to Address Environmental Justice in Minority and Low-Income Populations," issued in 1994. This policy directive to federal agencies outlines appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the

health or environment of minority and low-income populations to the greatest extent possible. The existence of disproportionately high and adverse impacts depends on the nature and magnitude of the effects identified for each of the individual resources.

4.20.11.2 Environmental Consequences

No Action Alternative

There would be no change in impacts anticipated under the No Action Alternative. Fort Stewart's continuing operations would continue to represent a beneficial source of regional economic activity. No additional impacts to housing, public and social services, public schools, public safety, or recreational activities are anticipated. Fort Stewart is currently constructing one additional DoD elementary school, two child development centers, and one youth activity center. All high school-aged students currently attend schools off post and would continue to do so in the future.

The number of Soldiers who work and train on Fort Stewart lands has increased by more than 20 percent from 2003 to 2011. The majority of Soldiers and their Family members live in Hinesville, followed by Richmond Hill and the other off-post communities. Additional RCI housing for Soldiers and Families and single Soldiers was recently completed, which included the demolition of old, worn-down facilities and the construction of new, modernized houses and barracks. Other projects to enhance quality of life, such as shoppettes, gas stations, playgrounds, and similar sites have either been constructed or are pending construction. No adverse impacts to schools, public health and safety services, or environmental justice would be anticipated, and the installation would continue to contribute to the tax base of the local economy.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Economic Impacts. The implementation of Alternative 1 would result in the loss of up to 8,000 military employees (Soldier and Army civilians), each with an average annual income of $41,830. In addition, this alternative would affect an estimated 4,464 spouses and 7,680 dependent children, for a total estimated potential impact to 12,144 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 20,144.

Based on the EIFS analysis, there would be significant socioeconomic impacts for sales volume, income, employment, and population in the ROI for this alternative. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.20-6. Table 4.20-7 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.20-6. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	27.26	8.46	18.58	4.56
Economic Contraction Significance Value	- 12.15	- 6.26	- 7.34	- 2.63
Forecast Value	- 21.48	- 12.32	- 22.04	- 13.8

Table 4.20-7. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	$297,822,900	$359,633,600	- 8,965 (Direct) - 791 (Indirect) - 9,756 (Total)	- 20,144
Percent	-21.48 (Annual Sales)	- 12.32	- 22.04	- 13.8

The total annual loss in volume of direct and indirect sales in the ROI represents an estimated -21.48 percent change from the current total sales volume of $1.38 billion within the ROI. State tax revenues would decrease by approximately $11.88 million as a result of the loss in revenue from sales reductions. Some counties within the ROI supplement the state sales tax of 4 percent by varying percentages, and these additional local tax revenues would be lost at the county and local level. Regional income would decrease by 12.32 percent. While 8,000 Soldier and Army government civilian positions would be lost within the ROI as a direct result of the implementation of Alternative 1, EIFS estimates another 965 military contract service jobs would be lost, and an additional 791 job losses would indirectly as a result of occur from a reduced demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 9,756 jobs, or a -22.04 percent change in regional employment. The total number of employed positions (military and private employment) in the ROI is estimated to be 44,260. A significant population reduction of 13.8 percent within the ROI is anticipated as a result of this alternative. Of the approximately 146,000 people (including those residing on Fort Stewart) that live within the ROI, 20,144 military employees and their dependents would be projected to no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes Soldiers and civilian employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.20-8 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.20-8. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- $274,958,832 (Local) - $612,911,252 (State)	- $370,596,376	- 8,605 (Direct) - 751 (Indirect) - 9,357 (Total)
Percent	- 19.92 (Total Regional)	- 12.70	- 21.14

The total annual loss in volume of direct and secondary sales in the region represents an estimated -19.92 percent change in regional sales volume according to the RECONS model, an impact that is 1.56 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume

numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately $24.52 million as a result of the loss in revenue from sales reductions, which would be $12.64 million more in lost state sales tax revenue that projected by the EIFS model. Regional income is projected by RECONS to decrease by 12.70 percent, slightly more than the 12.32 percent reduction projected by EIFS. While 8,000 Army Soldier and government civilian positions would be lost within the ROI, RECONS estimates another 605 military contract and service jobs would be lost, and an additional 751 job losses would occur indirectly as a result of reduced demand for goods and services. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 9,357 jobs, or a -21.14 percent change in regional employment, which would be 0.90 percent less than projected by the EIFS model.

Schools. The loss of 8,000 Soldiers and their associated Family members would have moderate adverse impacts to schools both on and off post, as this would eliminate a major source of their functioning revenue. For off-post schools, this loss would be felt through the decrease in funding from the Federal School Impact Aid program, which provided more than $10 million to county schools in the ROI in 2010. Fort Stewart schools would not be as adversely affected, but would still see a corresponding loss in revenue. The installation has also constructed several child-based facilities in recent years, including Child Development Centers and Youth Activity Centers, buildings which would potentially no longer be needed under this alternative, as Soldiers and their Families are relocated to other areas. Other uses for these facilities would be required to ensure they are not underutilized. This impact would not be significant.

Public Health and Safety Services. Reduced population levels on Fort Stewart would potentially result in corresponding reduced demand for the services of military police, fire department, emergency service providers, and medical care providers both on and off post. Soldiers, retirees, and their dependents would continue to require these services, but at a reduced frequency. Family support services and/or providers on post may also be used less frequently, although off-post Family support services throughout the ROI would not likely experience a significant decrease in clients. This impact would not be significant.

Recreation Facilities. The reduction in force could decrease the frequency of use of recreation facilities on post to a moderate degree. Retirees already living in this area, as well as members of the public, would still utilize these resources. The reduction in use; however, could correspond to a loss in revenue for some of these facilities, such as campgrounds, which operate partially on a revenue-based system and not solely on funds input through the FMWR. Others not relying on this source of funding would be less impacted. This impact would not be significant.

Environmental Justice. Fort Stewart does not anticipate that a disproportionate adverse impact to minorities, economically disadvantaged populations, or children would occur in the ROI as a result of the reduction in force. This is because there are no disproportionately high low-income or minority populations within, adjacent to, or near the installation boundaries, nor within its overall ROI. Liberty County has a higher African-American population (and a slightly higher Hispanic population than Georgia as a whole. At the state-wide level, adverse impacts to Liberty County would disproportionately affect those groups.

When assessing the results together, both models seem to indicate that the economic impacts of the implementation of Alternative 1 would lead to a net reduction of economic activity within the ROI of roughly the same order of magnitude.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Economic Impacts. The implementation of Alternative 2 would result in the increase of up to 3,000 Soldiers, each with an average annual income of $41,830. In addition, this alternative would affect an estimated 1,674 spouses and 2,880 dependent children, for a total estimated potential impact to 4,554 dependents. The total population of Soldiers and their dependents directly affected by Alternative 2 would be projected to be 7,554.

Based on the EIFS analysis, there would be no significant impacts for sales volume, income, or employment. There would be significant impacts for increased population in the ROI. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.20-9. Table 4.20-10 presents the projected economic impacts to the region for Alternative 2 as assessed by the Army's EIFS model.

Table 4.20-9. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 2

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	27.26	8.46	18.58	4.56
Economic Contraction Significance Value	-12.15	-6.26	-7.34	-2.63
Forecast Value	8.06	4.62	8.27	5.17

Table 4.20-10. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	$111,683,600	$134,862,600	3,362 (Direct) 297 (Indirect) 3,659 (Total)	7,554
Percent	8.06 (Annual Sales)	4.62	8.27	5.17

The total annual gain in direct and secondary sales represents an estimated 8.06 percent change in total sales volume from the current sales volume of $1.38 billion within the ROI. It is estimated that state tax revenues would increase by approximately $4.4 million as a result of the gain in revenue from sales increases. Some counties within the ROI supplement the state sales tax of 4 percent by varying percentages, and these additional local tax revenues would be gained at the county and local level. Regional income would increase by 4.62 percent. While 3,000 Soldiers would be gained within the ROI, EIFS estimates another 362 military contract service jobs would be gained, and an additional 297 jobs would be created indirectly as a result of increases in demand for goods and services in the ROI. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 3,659 jobs, or a 8.27 percent change in regional employment. The total number of employed positions (non-farm)) in the ROI is estimated to be approximately 44,260. A population increase of 5.17 percent within the ROI would be anticipated as a result of this alternative. Of the approximately 146,000 people (including those residing on Fort Stewart) that live within the ROI, 7,554 military employees and their dependents would be begin to reside in the area following the implementation of Alternative 2. This would lead to an increase in demand for housing, and decreased housing availability in the region. This would lead to a slight increase in median

home values. It should be noted that this estimate of population increase includes civilian and military employees and their dependents.

Table 4.20-11 shows the total projected economic impacts, based on the RECONS model, that would be projected to occur as a result of the implementation of Alternative 2.

Table 4.20-11. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment
Total	$103,109,562 (Local) $229,841,720 (State)	$138,973,641	3,227 (Direct) 282 (Indirect) 3,509 (Total)
Percent	7.46	4.76	7.93

The total annual gain in direct and secondary sales in the ROI would represent an estimated 7.46 percent change in total regional sales volume according to the RECONS model, an impact that is 0.60 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would increase by approximately $9.2 million as a result of the gain in revenue from sales reductions, which would be $4.8 million more in additional state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to increase by 4.76 percent, slightly more than the 4.62 percent increase projected by EIFS. While 3,000 Soldier positions would be gained within the ROI, RECONS estimates another 227 military contract and service jobs would be gained, and an additional 282 jobs would be created indirectly as a result of increases in demand for goods and services in the ROI. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 3,509 jobs, or a 7.93 percent change in regional non-farm employment, which would be 0.34 percentage points less than projected by the EIFS model.

Schools. Under this alternative, there would be a substantial increase in Soldiers and their Family members on post, as well as civilian employees and their Families. This would ensure the security of the revenue stream for the schools in the ROI, as well as a corresponding increase in funds as additional school-age children arrive with their Families. Existing facilities on post should be able to accommodate this amount of additional personnel; however, existing schools may feel a strain from the addition of the approximately 3,000 school-age children accompanying the incoming Soldiers and civilians. The construction of a new elementary school (replacing Diamond Elementary) is already in the planning stages, and the installation may require the construction of additional schools and youth-based facilities if these prove insufficient to accommodate the need. This impact would not be significant.

Public Health and Safety Services. Increased population levels on Fort Stewart would increase the demand for services from military police, fire department, emergency service providers, and medical care providers both on and off post. Additional medical clinics may be required, as the capacity of existing clinics and the hospitals becomes strained. Family support services and/or providers on post may experience a frequency in use, as more residents move into the ROI with the growth in force. This impact would not be significant.

Recreation Facilities. The demand for and frequency of use of recreation facilities on post would most likely increase as a result of this alternative. Impacts would be minor when considering the large number of existing recreational resources on post available for use by the incoming personnel. The FMWR may require additional servicing of their facilities, facility

upgrades, and/or personnel to accompany the corresponding minor increase in demand for these resources. This impact would not be significant.

Environmental Justice. Fort Stewart does not anticipate a disproportionate adverse impact to minorities, economically disadvantaged populations, or children would occur in the ROI as a result of an increase of this size. This is because there are no disproportionately high low-income or minority populations within, adjacent to, or near the installation boundaries, nor within its overall ROI. Liberty County has a higher African-American population (and a slightly higher Hispanic population than Georgia as a whole. At the state-wide level, adverse impacts to Liberty County would disproportionately affect those groups.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 2 would lead to a net beneficial impacts and growth of economic activity within the ROI of roughly the same order of magnitude.

4.20.12 Energy Demand and Generation

4.20.12.1 Affected Environment

Fort Stewart's energy consumption draws from six different sources of energy: electric power and natural gas, both delivered by commercial utilities, as well as No. 2 fuel oil, propane, waste wood, and waste oil. The abundance of energy sources, and adequate supplies from each source, provide Fort Stewart with ample excess energy capacity.

4.20.12.2 Environmental Consequences

No Action Alternative

The No Action Alternative would result in negligible energy demand and generation impacts. Fort Stewart's ranges and garrison area would continue to use and generate the same types and amounts of utility consumption for which the installation is already managing. Maintenance of existing utility systems would continue.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have an anticipated beneficial impact to energy demand due to the reduction in the on-post usage and decrease in the requirement for energy associated with the reduction in Soldiers. Fort Stewart would continue to search for innovative ways to conserve energy as a result of this alternative, as mandated by law and ARs for energy conservation.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Alternative 2 would have an anticipated minor adverse impact to energy demand due to the addition of up to 3,000 Soldiers and their Family members on post and their associated energy usage and requirements. Fort Stewart's existing energy infrastructure has sufficient excess capacity, diversity, and scalability to readily accommodate this growth if existing facilities would be utilized. If new facilities are needed, then the existing infrastructure may need to be improved. Fort Stewart would continue to implement energy conservation measures to improve the installation's energy efficiency.

4.20.13 Land Use Conflicts and Compatibility

4.20.13.1 Affected Environment

Land use at Fort Stewart is divided into the following categories: garrison, training lands, recreation, aesthetics and visual resources, and buffer and joint use areas (Fort Stewart, 2005). The garrison area is in the south-central portion of Fort Stewart next to the City of Hinesville and

consists of the administrative, operational, and residential portions of the installation. Fort Stewart's range and training land infrastructure support Abrams Tank, Bradley Fighting vehicle, Aerial Gunnery, Artillery, and other live-fire training, maneuver training, and individual team and collective tasks. Range Support Operations estimates about 200,000 Soldiers annually use the range facilities at Fort Stewart for mounted and dismounted individual weapons and crew qualifications. This number includes company/team through BCT maneuver exercises.

Fort Stewart maintains active ACUB and JLUS programs, working with local community partners to protect natural resources and sustain military operations. Common goals are to minimize rural land conversion to dense residential development around the installation, utilizing a variety of methods (depending on property owners' objectives), and to encourage compatible development.

4.20.13.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, no changes to land use conditions would occur and, therefore, no impacts would be anticipated. Training activities would continue on Fort Stewart at their current frequency.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have minor beneficial impacts to land use. A reduction in training land use would be anticipated that roughly correlates with the number of Soldiers inactivated or realigned as a result of this alternative. A reduction in training activities would allow more opportunities for other land uses such as ecosystem management or recreational activities.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Alternative 2 would have an anticipated minor impact to land use. The addition of up to 3,000 additional Soldiers would require the additional use of training areas and qualification ranges. These uses may require an increased need for management and balancing of training priorities such as unit live-fire and maneuver training activities.

4.20.14 Hazardous Materials and Hazardous Waste

4.20.14.1 Affected Environment

The affected environment includes the use, storage, transport, and disposal of hazardous materials and waste at Fort Stewart. This includes hazardous materials and waste from USTs and ASTs, pesticides, LBP, asbestos, PCBs, radon, and UXO. Each installation operates under a HWMP that manages hazardous waste to promote the protection of public health and the environment. Army policy is to substitute toxic and hazardous materials for nontoxic and nonhazardous ones; ensure compliance with local, state, and federal hazardous waste requirements; and ensure the use of waste management practices that comply with all applicable requirements pertaining to generation, treatment, storage, disposal, and transportation of hazardous wastes. The program reduces the need for corrective action through controlled management of solid and hazardous waste.

4.20.14.2 Environmental Consequences

No Action Alternative

Overall, negligible impacts are anticipated under the No Action Alternative. There would be no change in Fort Stewart's management of hazardous materials, toxic substances, hazardous

waste, or contaminated sites. Fort Stewart would continue to manage existing sources of hazardous waste in accordance with the HWMP.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

The implementation of Alternative 1 would have an anticipated minor impact to hazardous materials and waste. In the short term, there would be an increase in the demolition of outdated and no longer needed facilities, which would increase the volume of solid waste generated. In addition, an increase in asbestos containing materials and LBP disposal is anticipated until facility reduction is completed. Construction workers and Army personnel would take measures to dispose of materials in accordance with regulatory requirements and installation management plans. There would be limited increase in human health risk, or risk of environmental contamination as materials and wastes would be handled in accordance with the HWMP.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

The implementation of Alternative 2 would have an anticipated minor impact to hazardous materials and waste. There would be an increased amount of storage, use, handling, and disposal of hazardous materials, toxic substances, and hazardous wastes, due to the increase in Soldier strength; however, this would not increase the risk to human health due to direct exposure, would not increase the risk of environmental contamination, and would not violate applicable federal, state, local, or DoD regulations. Hazardous materials and wastes would be handled in accordance with the HWMP. Soldiers would be educated on existing management procedures, regulations, plans, and permits, per standard Army protocols, which would minimize risks.

4.20.15 Traffic and Transportation

4.20.15.1 Affected Environment

Regional access to Fort Stewart and Hinesville is from I-95 and I-16, U.S. Highway 84, and Georgia highways 119 and 144. Georgia Highway 119, a north-south highway, bisects Fort Stewart and separates the primary heavy maneuver training areas from the collective firing ranges. Georgia Highway 144, an east-west highway, separates Training Areas A and D from Training Areas B, C, E, and F in the northern portion of Fort Stewart and is the primary ground route to Hunter Army Airfield, Savannah, and I-95. A network of improved roads serves the main garrison area. About 400 miles of tank trails and unpaved roadways are outside the cantonment area.

4.20.15.2 Environmental Consequences

No Action Alternative

Surveys and studies conducted on the existing Fort Stewart transportation system determined that, although basically adequate to meet current needs, it is congested. Minor impacts to transportation would occur under the No Action Alternative. Minor delays at main ACPs during peak traffic hours would continue to occur. The traffic study determined that traffic intersection improvements are needed, and the roads themselves are beginning to physically degrade and require resurfacing. Recommendations to improve the system were provided and the installation has already completed both the NEPA review and/or construction for many of these projects. Recommended measures for correcting deficiencies would continue to be addressed.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Alternative 1 would have an anticipated beneficial impact to traffic and transportation systems. As fewer Soldiers and their Family members are left on post, traffic congestion would diminish

and travel delays would decrease. The roads would continue to be maintained and LOS for on- and off-post commuters would improve as traffic volume decreased. Delays at ACPs during peak traffic hours would also decrease. Transportation improvement projects planned to note existing deficiencies would still be implemented, improving the traffic and transportation environment even further.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Alternative 2 would have an anticipated moderate, less than significant, short and long-term impacts on traffic and transportation systems. The increase in off-post traffic would have a minimal impact on traffic in the community overall and could contribute to a decrease in the LOS of the road network leading to the installation from off post, particularly during peak morning and afternoon travel periods. This increase in population would also have a moderate impact on the traffic volume on the installation, and could cause a minor decrease in LOS on some of the installation's interior routes. The increased traffic volume in both the neighboring community and on the installation could pose an increased level of risk to the safety of pedestrians and bicyclists. Planned transportation improvement projects would still be implemented, improving the traffic and transportation environment.

4.20.16 Cumulative Impacts

Region of Influence

The ROI for the cumulative impacts analysis of the Army 2020 realignment at Fort Stewart encompasses five counties in the state of Georgia. The City of Hinesville, the city most immediately adjacent to the Fort Stewart cantonment area, is the largest city in Liberty County and has grown to be a progressive and pro-business community. Impacts may be felt to a lesser extent in Tattnall, Long, Evans, and Bryan counties. Fort Stewart has long been a key component of the economy of these counties since its development in the 1940s, employing several thousand Soldiers and civilian employees within the ROI and actively supporting the Army's Mission.

There are several planned actions within the ROI that have the potential to cumulatively add impacts to Army Force 2020 alternatives. These actions are either in progress or reasonably could be initiated within the next 5 years, as indicated in the installation's Real Property Master Planning processes. A list of projects below presents some of the projects which may add to the cumulative impacts of the implementation of Army 2020 realignment alternatives.

Fort Stewart Projects (Past, Present, and Reasonably Foreseeable)

- Construction of a Modified Record Fire Range, Infantry Platoon Battle Course, and Multi-Purpose Machine Gun Range;
- Improvements to the Convoy Live-Fire Training Area;
- Construction of a Digital MPTR, a Automated Combat Pistol Qualification Course, a Qualification Training Range, Military Working Dog Complex, and new facilities within the Georgia Army National Guard Complex (to include demolition of two existing facilities);
- Upgrades to Wright Army Airfield to include an UAS hangar, company operations facility, and a tactical equipment maintenance facility; and
- The construction of a Tactical Unmanned Aerial Vehicle Hangar Complex and five temporary Tactical Unmanned Aerial Vehicle storage hangars at Evans Army Airfield for the 3rd Infantry Division, as well as the construction of a Tactical Unmanned Aerial Vehicle Hangar Complex for the Georgia Army National Guard.

Other Agency (DoD and non-DoD) Actions (Past Present and Reasonably Foreseeable)

A runway extension is proposed at the joint use Midcoast Regional Airport at Wright Army Airfield.

Fort Stewart anticipates a range of cumulative impacts resulting from the implementation of the Proposed Action and its alternatives. Cumulative impacts for each alternative are as follows:

No Action Alternative

No adverse cumulative impacts would be anticipated from implementing the No Action Alternative. No changes in military authorizations or local environmental conditions would be anticipated, and installation facility shortages and excesses would remain at their currently planned levels without additional stationing or force reductions. The Army would continue to implement some facilities reductions of outdated/unused facilities as part of the FRP as well as some improvements. Under the No Action Alternative, cumulative impacts would not be more than minor impacts within the ROI.

Alternative 1: Force Reduction (up to 8,000 Soldiers and Army Civilians)

Cumulative impacts as a result of the implementation of Alternative 1 range from beneficial to significant. Negligible or minor cumulative impacts are anticipated for the following VECs: air quality, airspace, noise, soil erosion, biological resources, wetlands, surface water, hazardous materials and hazardous wastes, and traffic and transportation. The reduction of Soldiers on Fort Stewart would produce fewer training events, resulting in fewer air emissions (to include dust and particulates) and generation/use of hazardous materials and wastes, less soil erosion on existing roads and tank trails (improved and unimproved) from mechanized and/or wheeled vehicular traffic, and fewer impacts from travel on and off road to streams and connected wetlands and surface waters. Impacts to biological resources, such as protected species, would also be beneficial.

Fewer Soldiers residing on the installation would result in beneficial cumulative impacts to water supply and wastewater treatment, facilities, energy demand and generation, and traffic and transportation resources on post, as the demand for these resources would decrease.

Minor cumulative impacts are anticipated for cultural resources, but significant adverse cumulative impacts are anticipated for socioeconomics, both are discussed in more detail in the paragraphs that follow.

Cultural Resources. As a result of Alternative 1, minor cumulative impacts to cultural resources are anticipated. It is likely that the implementation of Alternative 1 would involve reducing the number of facilities on post, which may require consultation with the SHPO. Reasonably foreseeable future projects occurring on Fort Stewart in conjunction with Army 2020 force reduction would continue to undergo surveys and cultural resources would be avoided and/or mitigated for, including (when applicable) consultation with the SHPO. This includes both archaeological resources and historic structures, minimizing the potential for adverse effect to this resource. When considered cumulatively with Alternative 1, impacts would be minor.

Socioeconomics. As a result of Alternative 1, the Army anticipates significant adverse cumulative socioeconomic impact. Fort Stewart already accommodates a considerable amount of training (Infantry and Heavy Brigade). Any impacts from a loss of up to 8,000 Soldiers alone are not anticipated to change the installation's mission. However, nearby communities, such as Hinesville, would have to make considerable changes to their revenue stream in order to generate and/or make up for the tax, property, and school revenues it will lose once these Soldiers and their Families no longer reside, work, and/or live in the ROI. Regional

unemployment increased from 2006 through 2012, and the implementation of Alternative 1 would result in significant adverse cumulative economic impacts within the ROI.

Alternative 2: Installation gain of up to 3,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Cumulative impacts are projected to range from beneficial socioeconomic impacts to less than significant impacts to other VECs. The following VEC areas are anticipated to experience minor cumulative impact as a result of the implementation of Alternative 2: airspace, noise, soil erosion, biological resources, wetlands, water resources, energy demand and generation, hazardous materials and hazardous waste, and traffic and transportation.

Airspace. The increased operations as a result of the implementation of Alternative 2 could cause some minor impacts on air traffic flow within the NAS around Fort Stewart. This could result in limited time available for commercial and civilian use of Wright Army Airfield, a joint-use airfield with the City of Hinesville.

Noise. Noise levels may be elevated to NZ II during days of heavier training and military and/or civilian traffic. Construction may also contribute to noise levels, especially if it occurs adjacent to the installation boundary and near adjacent residential communities. Disturbance to wildlife receptors on or off post and to residential receptors is anticipated to be short term and not permanent. Though during these times of increased noise intensity, peak noise would not remain elevated, nor would this increase require a modification to the installation's noise management plan.

Soil Erosion. Soil erosion impacts to stormwater conveyance systems and other water bodies would result from the combination of construction projects on and off post and additional maneuver traffic. The installation anticipates the potential for increased siltation and sedimentation which could have water quality impacts, as well as impacts on the installation's federal- and state-listed species, which rely on those water sources for foraging and survival.

Biological Resources. There would be no minor cumulative impacts to biological resources. Installation range construction would result in minor cumulative impacts that would occur as ranges become operational and additional ranges are constructed at Fort Stewart. Cumulative projects considered within the ROI could amplify scheduling difficulties in accessing training areas for wildlife management. It is anticipated that continuing communication with Range Control can help minimize adverse wildlife management impacts.

Wetlands. The projects ongoing and reasonably foreseeable have been assessed for wetland impacts. The loss or degradation of wetland systems associated with these projects have either been avoided or minimized to the greatest extent practicable. That, coupled with Fort Stewart's planning practices for training events, would prevent more than minor cumulative impacts to wetland areas.

Water Supply and Wastewater Treatment. With the addition of the facilities listed above and a Soldier growth of up to 3,000, greater utility usage and demand is anticipated; however, each system has the capacity to meet these increased demands. This remains true even with the large projected growth and rapid increase regionally of the ROI population.

Surface Water. Ongoing and reasonably foreseeable future construction actions have the potential to impact impaired water bodies and/or stream buffers; however, designs of installation construction projects are thoroughly reviewed during construction planning to minimize any potential impacts to surface water. Effective implementation of the NPDES permit requirements, and the erosion and sedimentation pollution control plans during construction, and post construction BMPs would also reduce the potential adverse impacts to surface water.

Energy Demand and Generation. Although energy conservation is a vital and critical issue, the energy resource commitment as a result of the implementation of Alternative 2, along with ongoing and future construction, is not anticipated to be excessive in terms of region-wide usage. Materials and energy are not in short supply and their use would not have an adverse impact upon continued availability of these resources.

Hazardous Materials and Hazardous Waste. Hazardous materials and waste would increase with the addition of up to 3,000 Soldiers, as well as from ongoing and future construction and operation of the facilities listed above. Hazardous materials and waste management protocols would not change at Fort Stewart as a result of these actions, because units would continue to adhere to installation, state, and federal guidelines for hazardous materials and waste.

Traffic and Transportation. With the increase in military personnel, there would be an associated increase of traffic on post, with minor impacts. When considered cumulatively with Alternative 2, it is not anticipated that substantial changes to the road and tank trail rehabilitation projects currently planned or completed would be needed. Existing roads and tank trails are expected to accommodate the increased throughput. The number of vehicles entering and exiting the installation would not grow to a point that levels of service would be adversely impacted nor would access be significantly affected.

Impacts to the following VEC areas are anticipated to be more than minor in nature. These VECs are presented in additional detail below and include: cultural resources and facilities.

Cultural Resources. The increase in vehicle traffic and construction may directly damage unknown, undocumented artifacts. Adverse impacts to cultural resources or historic properties would require additional consultation with the SHPO, per 36 CFR 800. Indirect impacts to cultural or historic resources may come from the percussion or vibration of additional traffic from heavy tactical and non-tactical vehicles. Cumulatively, the installation CRM consults on all installation projects and implementation of the CRMP would be expected to result in less than significant cumulative impacts.

Facilities. Three ranges, in addition to ongoing construction, are expected to be constructed in the future; however, a range facility shortfall would still exist as result of the implementation of Alternative 2. This shortfall would be cumulatively less than significant and would be managed through scheduling of range facilities.

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4.21 FORT WAINWRIGHT, ALASKA

4.21.1 Introduction

U.S. Army Garrison Fort Wainwright (USAG FWA) is an Army garrison located in the Tanana River Valley of central Alaska, north of the Alaska Range, approximately 120 miles south of the Arctic Circle and adjacent to the City of Fairbanks. Environmental management of the approximately 1.6 million acres of Army range and training lands in Interior Alaska is currently the responsibility of USAG FWA. USAG FWA exercises authority over all of the range and training lands north of the Alaska Range, inclusive of the USAG FWA cantonment, Tanana Flats Training Area (TFTA) to the south, Yukon Training Area (YTA) to the east, and Donnelly Training Area (DTA), located approximately 100 miles to the southeast and near the City of Delta Junction. Also associated with USAG FWA are the Black Rapids Training Area, located to the south of DTA, and the Gerstle River Training Area (GRTA), located to the east of DTA. Figure 4.21-1 shows the Interior Alaska training areas.

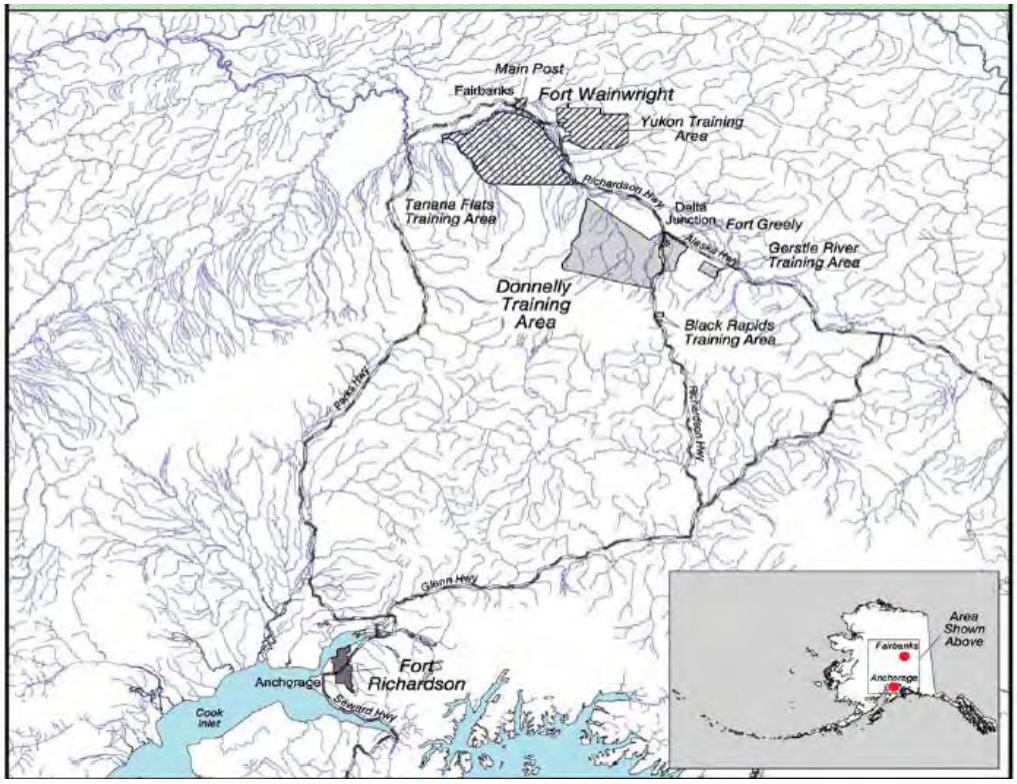

Figure 4.21-1. Fort Wainwright Main Post, Tanana Flats Training Area, Yukon Training Area, and Donnelly Training Area East

USAG FWA supports the stationing of several USARAK units, including the 1/25th SBCT, 16th CAB Aviation Mission Command Element (Alaska), 6-17th Cavalry, Detachment for B/209th Aviation Support Battalion, 1-52nd General Support Aviation Battalion, 472nd Military Police Company, Detachment from the 28th Military Police, 539th Transportation Company, 65th Ordnance Company, 9th Army Band, Detachment C from the 125th Finance Management Company, 507th Signal Company, and Northern Warfare Training Center. USAG FWA also supports several tenants including Cold Regions Test Center, the Cold Regions Research and Engineering Laboratory, Medical Department Activity, and the BLM Alaska Fire Service. USAG FWA is responsible for ownership and stewardship of withdrawn training lands for Army use.

USARAK is responsible for mission requirements which drive range usage and management. All Active Duty units are assigned to USARAK and utilize USAG FWA lands and facilities.

The USAG FWA borders the east and southeast sides of Fairbanks in the Chena River watershed. USAG FWA is home to the modularized 1/25th SBCT and 16th CAB. Approximately 6,600 USARAK Soldiers are stationed at USAG FWA. The approximate 645,000-acre DTA is south of Delta Junction in the Tanana Basin watershed, which is an Interior Alaska glacial waterway. DTA is a training facility that supports Army training, as well as joint and international training events. No Soldiers are permanently stationed at DTA.

USAG FWA has in recent years produced a variety of NEPA analyses evaluating several actions including Army force transformation efforts, the addition of Soldiers and new equipment, a general increased use of training lands, and numerous range development projects. The following documents (incorporated by reference) provide a synopsis of previous environmental analysis of USARAK Transformation, stationing actions, and evolution of day-to-day operations.

- *Transformation of U.S. Army Alaska Final EIS, May 2004*. This document analyzes the impacts to USARAK lands and surrounding communities and land users associated with the transformation of the 172nd Infantry Brigade (Separate) at USAG FWA and FRA into the 1-25th SBCT. This EIS serves as a foundational reference source for this PEA, particularly in regards to USAG FWA.
- *Battle Area Complex/Combined Arms Collective Training Facility EIS (BAX/CACTF) Final EIS, June 2006.* This document provides an environmental analysis of construction and operation of a combat training facility at DTA East. This EIS focuses on the existing environment at DTA East and provides a comprehensive description of existing resources. The *BAX/CACTF EIS* (2006) will serve as a foundational reference source for this PEA, particularly in regards to DTA.
- *Conversion of the Airborne Task Force to an Airborne Brigade Combat Team EA, 2006*. This document analyzes the impacts associated with conversion of the existing airborne task force into the 4-25 Airborne BCT at FRA.
- *Environmental Assessment for Donnelly Training Area East Mobility and Maneuver Enhancements, Fort Wainwright, Alaska, 2008*. This document analyzes the impacts associated with the expansion of the Donnelly Drop Zone, trail improvements, and creation of a hardened bivouac to accommodate changing mission requirements at DTA.
- *Alaska Army Lands Withdrawal Renewal Final Legislative EIS, 1999*. This document demonstrates the need for and examines the renewal of the existing military withdrawals of USAG FWA YTA and Fort Greely West Training Area and Fort Greely East Training Area from public use for military purposes until November 6, 2051. Fort Greely West and East Training Areas have subsequently been renamed DTA West and East training areas.
- *U.S. Army Pacific Supplemental Programmatic EIS for Army Growth and Force Structure Realignment, 2008*. This document evaluates the effects associated with growing and realigning the Army's force structure to support military operations in the Pacific Theater, including the addition of approximately 2,200 new Soldiers in Alaska.
- *USAG Alaska Grow the Army Force Structure Realignment EA, 2008.* Tiering off the above EIS, this document evaluates the effects associated with facility construction and training actions to accommodate new military units to be stationed in Alaska. The EA analyzes site-specific facility and range construction as well as increased training that will be necessary to support incoming Soldiers and their Families.

- *U.S. Army Garrison Alaska's Range Complex and Training Land Upgrades Programmatic EA, March 2010*. This document analyzes the implementation of various management actions to maximize the efficiency and effectiveness of environmental review of range and training land projects at USAG FWA.
- *INRMP 2007-2011 and 2007 INRMP EA, January 2007*. These documents describe standard policies and procedures for managing natural resources to ensure sustainability of USAG FWA lands.
- *ICRMP, 2001.* This document outlines treatment for and management of USAG FWA cultural resources.
- *ITAM Plan and ITAM EA, October 2005 and June 2005, respectively.* These documents focus on managing sustainable use of training areas and provide recommended measures to achieve sustainability and rehabilitation of lands impacted by training.
- *Army Small Arms Training Range Environmental BMPs, 2005*. This document provides a manual of BMPs used on Small Arms Training Ranges.

4.21.1.1 Valued Environmental Components

For alternatives the Army is considering as part of Army 2020 force structure realignments, USAG FWA does not anticipate any significant adverse environmental impacts as a result of the implementation of Alternative 1 (Force reduction of up to 4,900 Soldiers and Army Civilians) or Alternative 2 (Installation gain of up to 1,000 Soldiers). However, USAG FWA does anticipate significant socioeconomic impacts to economic activity (employment and population) resulting from the implementation of Alternative 1. Table 4.21-1 summarizes the anticipated impacts to VECs from each alternative.

Table 4.21-1. Fort Wainwright Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 4,900	Alternative 2: Growth of up to 1,000
Air Quality	Minor	Beneficial	Minor
Airspace	Minor	Beneficial	Minor
Cultural Resources	Significant but Mitigable	Significant but Mitigable	Significant but Mitigable
Noise	Minor	Beneficial	Minor
Soil Erosion	Minor	Minor	Minor
Biological Resources	Minor	Minor	Minor
Wetlands	Minor	Minor	Minor
Water Resources	Minor	Minor	Minor
Facilities	Negligible	Minor	Minor
Socioeconomics	Minor	Significant	Beneficial
Energy Demand and Generation	Negligible	Beneficial	Minor
Land Use Conflict and Compatibility	Minor	Minor	Minor

Valued Environmental Component	No Action Alternative	Alternative 1: Force Reduction of up to 4,900	Alternative 2: Growth of up to 1,000
Hazardous Materials and Hazardous Waste	Negligible	Negligible	Negligible
Traffic and Transportation	Minor	Beneficial	Minor

4.21.2 Air Quality

4.21.2.1 Affected Environment

USAG FWA is located within the Northern Alaska Intrastate AQCR. The main emission source at USAG FWA is the Central Heating and Power Plant, which consists of six, 230 x 10^6 British thermal unit per hour coal-fired boilers. In addition, several insignificant emissions units, including small backup generators, small boilers for building heating, and USTs, are located within the boundary limits of the cantonment area. Emissions of three of the six criteria pollutants (CO, NO_x, and SO_2) and HAPs from emission units located at USAG FWA exceed the Title V Operating Permit Program (Title V) major source thresholds (100 tpy for each criteria pollutant, 10 tpy for any one HAP, and 25 tpy for total HAP). Emissions of the other three criteria pollutants (PM, VOCs, and lead) are less than the Title V major source thresholds. Because emissions exceed the Title V major source threshold when USAG FWA is considered a single stationary source, it is subject to the requirements of Title V.

On August 15, 2008, the utility systems at Fort Wainwright, including the electric and heat distribution, power generation, water distribution, and wastewater collection utility system, were privatized to a private utilities contractor. Through privatization, ownership of all affected systems and associated environmental permits were transferred to the private utilities contractor. In anticipation of the ownership transfer and associated environmental permits, USAG FWA submitted two separate Title V permit renewal applications on November 7, 2007 - one for the emission units that were anticipated to remain under the control of USAG FWA and one for the emission units that would be owned by the private utilities contractor. USAG FWA was operating under Alaska Title V Permit No. AQ0236TVP01, which expired on May 13, 2008. USAG FWA was required to submit a renewal application no later than 180 days prior to the expiration date of the permit (i.e., November 13, 2007). On December 5, 2008, Title V permits were issued to USAG FWA (Permit No. AQ0236TVP02) for the units under ownership of the USAG FWA and to the private utilities contractor (Permit No AQ1121TVP01) for the utility units purchased through the privatization contract.

On July 18, 1997, EPA promulgated the primary $PM_{2.5}$ NAAQS at 15 µg/m^3 for the annual standard and at 65 µg/m^3 for the daily standard. In 2004, Alaska recommended that the EPA designate all areas of the state in attainment for the annual and 24-hour standards; however, on October 17, 2006, the EPA revised the primary and secondary 24-hour NAAQS for $PM_{2.5}$ to 35 µg/m^3 and retained the existing annual standard. Ambient air monitoring conducted in downtown Fairbanks from 2004 through 2006 revealed $PM_{2.5}$ ambient concentrations exceeded the revised NAAQS. As such, on December 22, 2008, the EPA classified portions of the Fairbanks North Star Borough (FNSB) as a nonattainment area for $PM_{2.5}$. The nonattainment boundary consists of a portion of the Fairbanks North Star Borough, urban Fairbanks, and USAG FWA, and excludes Eielson Air Force Base, TFTA, and YTA.

The nonattainment designation for the FNSB begins the process whereby Alaska must develop an implementation plan (i.e., SIP) that includes, among other things, a demonstration showing

how it would attain the ambient standards by the attainment dates required in the CAA. Under Section 172(b) of the CAA, states have up to 3 years after EPA's final designations to submit their SIPs to EPA; therefore, Alaska's $PM_{2.5}$ SIPs would have to be submitted no later than approximately April 2012. The end result is an attainment plan that serves as the basis for deriving local requirements and regulations that could impose additional standards and conditions on sources of emissions within the nonattainment area. The attainment plan, which is incorporated into the SIP, considers an emission budget, community growth (population and economic), and any federal projects that may offset emissions.

If a federal action at Fort Wainwright results in direct emissions of $PM_{2.5}$ or a precursor (SO_2 and NO_x) of less than 100 tpy, the action is considered to be insignificant with respect to interfering with the attainment or maintenance of the $PM_{2.5}$ NAAQS; and thereby, conforming to the SIP. When the applicability analysis shows that a Proposed Action must undergo a conformity determination, the Army must first show that the action would meet all SIP control requirements, and the emissions from the action would not interfere with the timely attainment of the standard, the maintenance of the standard, or the area's ability to achieve an interim emission reduction milestone.

DTA is not considered a major source facility. Emission sources associated with 7,000 acres, now known as Fort Greely, were transferred to the Space Missile Defense Command on 01 October 2002. The Title V Permit Application originally submitted by USAG Alaska in December 1997, was transferred from USAG Alaska to the Space Missile Defense Command.

4.21.2.2 Environmental Consequences

No Action Alternative

There would continue to be minor short- and long-term air emissions impacts from training and installation operations under the No Action Alternative. These impacts would continue at current levels under the installation's Title V permit. Permit conditions would continue to be monitored and met, but no changes to emission sources are anticipated, other than those mandated by maintenance, replacement, or elimination of sources as they age or are removed from service.

Alternative 1: Force Reduction (up to 4,900 Soldiers and Army Civilians)

There would be an anticipated beneficial impact to regional air quality from reduced stationary and mobile emission sources. There would be less combustion and generation of NAAQS pollutants and HAPs associated with military training.

Construction related impacts and impacts of facilities demolition would be temporary and would include an increase in dust mobile source emissions from construction vehicles and limited demolition activity. Long-term effects from reduction of these units at USAG FWA would include a decrease in stationary source emissions such as from boiler units and generators used in new facilities and by units using transportable generators during training operations. Fewer vehicles would contribute to air pollutants (for example CO and O_3) in the vicinity of USAG FWA's cantonment area. Since no training infrastructure construction would occur, no soil disturbance generating fugitive dust would occur. Additionally, fewer generators would be used to support operations. The risk of wildfires would also decrease, eliminating the possibility of military-caused short-term adverse impacts to air quality.

A decrease in maneuver activities would occur resulting in a decrease of opacity or fugitive dust emissions, and vehicle emissions, including PM, CO, and O_3.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be an anticipated minor impact on air quality in the airsheds surrounding USAG FWA as a result of implementing Alternative 2. There would be an anticipated minor increase in air emissions from both mobile and stationary sources that would be generated to support additional Soldiers and their Families. Though USAG FWA can anticipate increased emissions from military vehicles and generators used to support training events as well as increases in fugitive dust, the increase of 1,000 Soldiers would have minor impacts to regional air quality. USAG FWA would not be anticipated to exceed the emissions limits of its Title V permit or to engage in activities causing any change in attainment status or exceedance of NAAQS. Construction related impacts would be temporary and would include an increase in dust mobile source emissions from construction vehicles and limited demolition activity. Long-term effects from stationing these units at USAG FWA could include an increase in stationary source emissions such as from boiler units and generators used in new facilities. The use of this equipment may require USAG FWA to apply for a major or minor air quality permit through the Alaska Department of Environmental Conservation. Alternative 2 would add POVs and 200-300 additional fleet vehicles (tactical and non-tactical vehicles that may require an additional maintenance facility). Additional vehicles would contribute to air pollutants (for example CO and O_3) in the vicinity of USAG FWA's cantonment area.

If Alternative 2 is implemented, the need for conformity review would be determined when exact unit equipment and facilities requirements are known and can be more fully assessed at the installation. An air conformity determination may be required to support new unit stationing.

Short-term effects from construction of additional facilities would occur. Construction vehicles involved with some range expansion would cause soil disturbance that may generate fugitive dust leading to additional air quality impacts. Additionally, fugitive emissions and dust generated from construction of ranges would affect the areas adjacent to ranges, but are likely to be contained within the range area. BMPs would be used to mitigate fugitive dust emissions during construction. Live-fire activities may also increase the risk of wildfires, which may create short-term adverse impacts to air quality. Fires can add CO, $PM_{2.5}$, and polycyclic aromatic hydrocarbons, among other combustion byproducts. In addition, the smoke created from fires can travel great distances and potentially impact on-post housing and off-post communities. Maneuver activities may increase by about 10 to 20 percent. Smaller unit maneuvers would continue to be supported at USAG FWA, while company-level and above would be supported at DTA, TFTA, and YTA. Vehicles associated with Combat Support or Combat Service Support training occurring on roads, trails, or hardened surfaces would increase the occurrence of opacity or fugitive dust emissions; however, these effects are anticipated to be localized to the range area. Vehicle emissions would also add to the pollutants currently being released in maneuver areas including PM, CO, and O_3. In addition, Combat Support units would have an increased (localized) effect to air quality from off-road maneuvering. The increase in off-road maneuvers would denude soils of vegetation and could lead to increased opacity and fugitive dust within the range area. The USARAK ITAM program is an existing Army program that would continue to monitor vegetation loss and soil erosion, and conduct maneuver damage repair and revegetation, as needed.

4.21.3 Airspace

4.21.3.1 Affected Environment

Aviation is an essential component of transportation in the USAG FWA region and across the State of Alaska. The civilian aviation community utilizes Fairbanks International Airport as well as numerous smaller airfields within the region. The military, in cooperation with the State of

Alaska and the FAA has established no-fly areas and altitude restrictions to minimize the impact on communities and environment as well as commercial and general aviation. The Fairbanks North Star Borough has established policies of planning and zoning to control or prohibit residential or commercial activities that may conflict with military activities. In addition, a 2006 JLUS (FNSB, 2006) established compatible use zones and air safety zones around both USAG FWA and Eielson Air Force Base.

USAG FWA has its own airfield, Ladd Army Airfield, and also uses nearby Eielson Air Force Base for large-scale deployments. Both the airfield and the Air Force Base can support the aerial operations of all military aircraft to include C-17 transport aircraft. Ladd Army Airfield has one active runway; several ancillary taxiways, and hangars. The airspace surrounding Ladd Army Airfield is classified as Class D. USAG FWA operates its Small Arms Ranges in SUA called Controlled Fire Areas that are considered "Non-Rulemaking," which is non-regulatory in nature and there for transparent to any transitioning aircraft. There are currently five MOAs that extend varying from 100 AGL, 300 AGL and 500 AGL to 17,999 feet MSL. The MOAs span from south of Delta Junction to north of Fairbanks. The YTA contains Restricted Airspace R-2205 that covers the eastern portion of the training area and the Stuart Creek Impact Area that extends from the surface to 20,000 MSL. Restricted airspace overlays the southern portion of the TFTA in R-2211 that is operational from the surface to FL310. Controlled Fire Areas are also located at the DTA Small Arms Ranges. Most of DTA West is within the Restricted Area R-2202A, B and C with an altitude from the surface to FL310. The Restricted Areas are closed to all non-participating aircraft during periods of scheduled activity. Nearby Allen Army Airfield is capable of supporting C5/C17 aircraft and is also defined as Class D airspace. There is also a small unpaved light aircraft landing strip north at Delta Junction.

4.21.3.2 Environmental Consequences

No Action Alternative

The No Action Alternative would not produce any new conflicts with overlying restricted airspace. Military airspace use impacts would remain minor.

Alternative 1: Force Reduction (up to 4,900 Soldiers and Army Civilians)

Impacts as a result of the implementation of Alternative 1 would be beneficial. The use of airspace would not change significantly with the loss of ground units as a result of this alternative. Aviation and UAS would continue to require airspace to support training. This implementation of Alternative 1 would result in a slight and marginally lower utilization rate of existing military airspace as some units with UAS may be inactivated and no longer require activation and use of the airspace. No range expansion projects would occur as a result of Alternative 1. Thus, no modifications to controlled or SUA is anticipated for additional restricted airspace to support surface danger zones over new ranges. Training involving the use of munitions, weapons systems, and ranges that require SUA would occur at reduced levels. Reduction in training would likely result in less utilization of SUA by the Army. Thus, adverse impacts associated with closures of certain SUA would be reduced and this would be a beneficial impact to members of the general aviation community. Maneuver training would occur at reduced levels, potentially resulting in less closures of SUA over military lands.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be an anticipated minor impact to airspace as a result of the implementation of Alternative 2. The increased use of airspace would likely remain unchanged or could change with a negligible increase. Additional airspace would not be required, and scheduling, activation, and utilization of existing military airspace (SUA) would proceed as it currently does without

change. Maneuver training of these ground-based units would have no effect to airspace at USAG FWA. Additional airspace is not required to accommodate the types of ground-based maneuvers associated with the proposed growth.

4.21.4 Cultural Resources

4.21.4.1 Affected Environment

Interior Alaska has been continuously inhabited for the last 14,000 years and evidence of this continuum of human activity has been preserved within and around USAG FWA's training lands. Interior Alaska's ice-free status during the last glacial period provided a corridor connecting the Bering Land Bridge and eastern Asia to North America. This allowed small bands of nomadic peoples to colonize Alaska and the rest of the continent and began a period of habitation in Interior Alaska that has persisted through the entire Holocene, the arrival of European traders in the late 1810s, the Klondike gold rush of the late 19th and early 20th centuries, and the military development of the Interior during the middle of the 20th century. USAG FWA's cantonment and training lands comprise a vast and still relatively un-surveyed region with areas of high potential for yielding evidence of this activity.

Alaska has long been regarded as the gateway to the Americas and has held archaeological interest as the possible location for the oldest archaeological sites in the New World. This is due to more than Alaska's proximity to Asia and ice-free condition at the end of the Pleistocene. Similarities between archaeological assemblages in Siberia and Alaska and the discovery of lanceolate projectile points in the muck deposits around Fairbanks in the early 1900s (which bore a resemblance to Clovis points of some antiquity in the American southwest) also sparked interest in Alaska as a source area for all Native Americans.

After initial colonization, archaeologists generally divide Interior Alaska's prehistory into three broad archaeological themes: the Paleoarctic Tradition (12,000-6,000 years ago), the Northern Archaic Tradition (6,000-1,000 years ago), and the Athabaskan Tradition (1,300-800 years ago). Archeological materials from these cultures are generally limited to lithic artifacts such as projectile points, cutting tools, scrapers, waste flakes from tool manufacturing, faunal remains, and hearths.

Interior Alaska's history is divided into four historic themes according to the types and levels of Euro-American activities. These are the Early Contact history (1810s to 1880s), Gold Rush (1880s to 1928), Development of Infrastructure (1890s to 1910s), and Military Activities (1890s to present).

Known sites in Interior Alaska have been identified predominantly through discoveries by area residents and road construction crews, and other chance discoveries. Consultation with Alaska Native Tribes to identify TCP's or other sites of cultural or sacred significance has been on-going. Efforts have been made to document these sites, utilizing input from indigenous land users. To date, one report has been produced to document the lands at DTA. The next area of study would include all other Interior training lands.

USAG FWA and its training lands contain 636 known archaeological sites and four archaeological districts. Sixty sites are eligible for the NRHP, 512 sites have not been evaluated, and 64 additional sites have been determined ineligible for the NRHP. Of the eligible or un-evaluated sites, 13 are historic sites and 559 are prehistoric sites.

In 2011, CEMML completed a survey of the entire cantonment, north and south of the Chena River, discovering one additional historic site. Of the 11 archaeological sites known from the USAG FWA cantonment, 2 have been determined not eligible. The remaining sites have not yet been evaluated.

In total, archaeologists have identified 147 archaeological sites in the TFTA. Of these sites, 11 have been determined eligible for inclusion in the NRHP, 2 are not eligible, and 134 remain to be evaluated for eligibility.

Twenty-one archaeological sites have been identified in the YTA. Ten of the sites have been determined not eligible for listing in the NRHP and 11 have not been evaluated, one of which will not be evaluated due to its location in a heavily used portion of the Stuart Creek Impact Area.

To date, 454 archaeological sites have been identified within DTA. Forty-nine sites have been found to be eligible for the NRHP, and 50 were found not eligible. An additional 355 sites remain to be evaluated. Historic archaeology sites are poorly represented in this region, with only six currently known to exist. The Donnelly Ridge District encompasses Denali sites identified by Frederick West, south and west of Donnelly Dome.

The Gerstle River and Black Rapids Training Area, also managed by USAG FWA, have been infrequently utilized by training activities, and very few surveys or identification of archaeological sites have occurred in these areas. CEMML archaeologists surveyed two small portions of the GRTA in 2011. One prehistoric site is previously known from this training area. Two sites, which have not been evaluated for the NRHP, have been discovered in the Black Rapids Training Area.

Architectural Surveys. The National Park Service conducted the first building survey of USAG FWA in 1984. This survey was conducted as part of the process to identify extant buildings associated with the World War II era Ladd Field. This survey resulted in the designation of Ladd Field as a NHL.

The entire USAG FWA main post has been inventoried and evaluated for eligibility for inclusion in the NRHP under the World War II and Cold War historic contexts. Under the World War II context, Ladd Field has been designated a NHL. The Ladd Field NHL includes 37 buildings and structures centered on the runways.

Under the Cold War context, the main post has been inventoried and evaluated with 70 buildings and structures centered on the runways contributing to the Ladd Air Force Base Historic District. This Historic District was determined eligible for inclusion in the NRHP but not formally nominated or listed.

A survey of range structures in the TFTA was conducted in 2001 and none were evaluated as eligible for listing on the NRHP (Price, 2002).

At YTA, two Nike Missile Sites exist; these are Site Mike and Site Peter. Each consists of a Battery Control Area and a Launch Area. Cleanup efforts occurring in the late 1980s and early 1990s precluded these sites for inclusion in the NRHP.

4.21.4.2 Environmental Consequences

No Action Alternative

Impacts to cultural resources under the No Action Alternative would be significant but mitigable. Activities with the potential to affect cultural resources are routinely monitored and regulated in accordance with the USAG FWA ICRMP through the cultural resource management program.

Alternative 1: Force Reduction (up to 4,900 Soldiers and Army Civilians)

Significant but mitigable impacts are anticipated as a result of the implementation of Alternative 1 at USAG FWA. Building demolition, solid waste disposal, site recapitalization, and repurposing of existing facilities to assist the Army in efficiently managing its infrastructure and

operating costs, while supporting its Soldiers could potentially disturb or damage cultural resources, or could alter properties and districts. Demolition of facilities within USAG FWA's current Historic District and/or NHL may result in an adverse effect. NHPA Section 106 consultation would be required. Any demolition or repurposing activity occurring adjacent to the Historic District and/or NHL may also require additional Section 106 consultation. USAG FWA would avoid potential impacts to cultural resources during planning for potential cantonment area modification. If impact could not be avoided, measures to minimize or mitigate adverse impacts to cultural resources would be implemented through the NHPA Section 106 consultation process. All activity associated with Alternative 1 would occur on previously disturbed ground. Thus, adverse impacts to other cultural resources are unlikely.

Alternative 1 could result in the modernization and re-purposing of outdated range infrastructure to accommodate new training requirements on facilities that are no longer needed by Army units as a result of force reduction. Construction activity would involve grading and re-grading site surfaces, grubbing vegetation, and using heavy equipment to excavate the subsurface during range repurposing activities. Although these repurposing projects would be located on previously disturbed ground, construction activities have the potential to result in damage to yet-to-be discovered cultural resources. USAG FWA would avoid potential impacts to cultural resources during facility planning. If impact could not be avoided, measures to minimize or mitigate adverse impacts to cultural resources would be implemented through the NHPA Section 106 consultation process. The frequency and intensity of maneuver training would decrease as a result of this alternative. All remaining maneuver training would be conducted within the footprint of existing ranges and trails at USAG FWA; however, any impacts resulting from maneuver training to undocumented cultural resources currently not identified would be reduced given the lower amount of Army training occurring as a result of the implementation of Alternative 1.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

This level of growth on USAG FWA is anticipated to have a significant but mitigable impact to cultural resources. Measures are in place to accommodate training to prevent adverse impacts to cultural resources. The types of training conducted by the additional Soldiers would not change, though some training areas on USAG FWA might be used with marginally more frequency or intensity compared with current baseline conditions. The USAG FWA CRM would continue to follow the procedures outlined in the ICRMP in order to protect cultural resources.

Garrison construction supporting Alternative 2 could potentially disturb or damage cultural resources, or could alter properties and districts. Infill construction in the main post and any associated demolition of facilities to make room for new construction within USAG FWA's current Historic District and/or NHL may result in an adverse effect. NHPA Section 106 consultation would be required. Any construction occurring adjacent to the Historic District and/or NHL may also require additional Section 106 consultation. USAG FWA would avoid potential impacts to cultural resources during planning for potential cantonment construction. If impact could not be avoided, measures to minimize or mitigate adverse impacts to cultural resources would be implemented through the NHPA Section 106 consultation process. All construction associated with this alternative would occur on previously disturbed ground. Thus, adverse impacts to other cultural resources are unlikely.

Negligible impacts from live-fire training are anticipated. Range expansion and new targetry would be sited to avoid cultural resources at USAG FWA following identification of these sites during cultural resource surveys. The frequency and intensity of maneuver training would slightly increase under Alternative 2. As a result of the implementation of Alternative 1, all

maneuver training would be conducted within the footprint of existing ranges and trails at USAG FWA; however, undocumented cultural resources currently not identified could be impacted through maneuver training. Stationing scenarios involving Combat Support units, particularly engineer or combat engineer units, may involve some surface excavation, which could potentially uncover or damage undocumented cultural resources. If impact could not be avoided, measures to minimize or mitigate adverse impacts to cultural resources would be implemented through the NHPA Section 106 consultation process.

4.21.5 Noise

4.21.5.1 Affected Environment

The majority of the area surrounding the USAG FWA training sites are relatively remote and are either undeveloped or have low-density populations. The principle source of operational noise occurs at the USAG FWA main post area and is generated through aviation activity and small arms live-fire training and qualification.

At USAG FWA main post, aviation activity contours indicate that there are some noise sensitive land uses within the NZs. Though the NZ III at Ladd Army Airfield is contained within the installation, beyond the eastern boundary, there is a small privately owned off-post residential area (Secluded Acres) east of the airfield that is within NZ II. Additionally, there is potential for individual events to possibly generate noise complaints. The noise from small arms training at the main post area may be audible in noise-sensitive areas beyond the boundary. Though the NZ III does not contain any non-recommended sensitive land uses, the small caliber NZ II outside of USAG FWA has the potential to impact multiple residences. The noise impact from large caliber and explosive training is generally contained within the installation. The NZs are relatively localized to the ranges on post. The contours indicate that annual average noise levels are compatible with the surrounding environment. Yet, there is potential for individual events to cause annoyance and possibly generate noise complaints. Dependent upon weather conditions, there is a low-to-moderate risk of complaints due to large caliber weapons and explosion training.

The noise levels from training at TFTA are compatible with Army guidelines. Due to the limited number of operations, the NZs do not extend beyond the impact area. The isolated location of the TFTA makes it unlikely that individual events would generate noise complaints. The noise levels from large caliber activity at YTA are compatible with the nearby land uses at Eielson Air Force Base. The NZs do not extend into any noise sensitive land use areas either on or off base. The isolated location of the YTA ranges makes it unlikely that individual events would generate noise complaints either on or off base. The noise levels from training at the small caliber ranges at DTA East and West are compatible with Army guidelines.

The noise levels from the large caliber weapon training at the Donnelly West Training Area are compatible with Army guidelines. Due to the size of the DTA, the NZs for the demolition and large caliber weapons do not extend beyond the ranges and impact areas; however, under unfavorable weather conditions, the demolition and large caliber weapons have a low to moderate risk of generating noise complaints in the non-military parcel of land and on post. The noise levels from training at Black Rapids training area are compatible with Army guidelines. The NZs do not extend beyond the boundary. There are currently no noise generating operations at GRTA.

4.21.5.2 Environmental Consequences

No Action Alternative

The No Action Alternative would result in minor noise impacts from aviation, field artillery firing, and live-fire and maneuver training. Noise generating activities would occur with no change to current frequencies or intensities of noise generating activities.

Alternative 1: Force Reduction (up to 4,900 Soldiers and Army Civilians)

Impacts from noise are anticipated to be beneficial as a result of the implementation of Alternative 1. Existing ranges would still be utilized for firing the same types of weapons systems and conducting the same types of training, however, as a result of the implementation of Alternative 1, USAG FWA would experience an anticipated reduction in the frequency of noise generating training events. The number of weapons qualifications and maneuver training events could be anticipated to decrease. Noise impacts would likely remain comparable to current conditions, though less frequent leading to a reduced risk of noise complaints. The current frequency of aviation training activities, a contributor of noise at the installation, would not be anticipated to change more than marginally, as aviation units would not be impacted by these decisions.

Impacts from building demolition, site recapitalization, and the repurposing of existing facilities to accommodate different Army needs would be temporary. A decreased frequency of noise generating events would correspond to the decreased maneuvers resulting from Alternative 1 to include noise effects that would be produced from convoy travel on public roads.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be an anticipated minor impact on the installation and surrounding communities by the stationing of up to 1,000 Combat/Combat Support Soldiers. Noise modeling has indicated that the frequency of training and live-fire events would need to increase dramatically to result in a change in noise contours that would noticeably increase impacts for sensitive receptor populations. Given that there are no new types of activities that would occur as a result of stationing of these Soldiers, just an increase in the types of existing noise generating activities, only minor impacts are anticipated to occur as a result of implementing this alternative.

Impacts from garrison construction would be temporary. Noise associated with construction would result mainly from the movement of vehicles and equipment. Noise associated with construction equipment generally produce noise levels of 80 to 90 dBA at a distance of 50 feet. Permissible noise exposures identified by the OSHA (29 CFR 1910.95) for an 8-hour work day is 90 dBA; therefore, construction noise in the cantonment area would likely be compliant with these levels. The zone of relatively high construction noise may extend to distances of 400 to 800 feet from major equipment operations. Locations that are more than 1,000 feet from construction sites generally do not experience significant noise levels; however, temporary noise impacts may occur to wildlife. These effects are discussed in Section 4.21.7.

If any training range construction were required, it would result from the movement of construction vehicles and equipment. Significant effects are not anticipated to the public due to distance from expansion locations to off-post communities. Temporary noise impacts; however, may occur to wildlife. This would be discussed in Section 4.21.7, Biological Resources.

Stationing of up to 1,000 Soldiers would increase the frequency of noise generating events. The frequency of live-fire events that generate noise may increase by 10 to 20 percent for 1,000 Soldiers. Because units would be using the same weapons systems as are currently being used during live-fire training at the installation, the types of noise would not change; however,

the number of noise generating events would increase. Residential areas located in the vicinity of the range complex may experience an increase in noise events. Due to the limitations on development near the installation, coupled with an approximate distance of 656 feet between the nearest civilian facility to the small arms range complex at USAG FWA, the effect from increased live-fire activities at the small arms range complex is anticipated to be minor. At DTA, there may be some anticipated noise effects to wildlife from use of firing points along the Delta River where bison, caribou and moose are known to inhabit.

The Army would continue to inform Delta Junction and local residents about live-fire training operations. There have been no significant impacts to these residences from Army-generated noise in the past.

Although there would be an increase in Soldiers maneuvering, the type of noise would be consistent with ongoing maneuver activities. The increased frequency of noise generating events would correspond to the increased maneuvers associated with these stationing alternatives (10 to 20 percent). The noise effects that would be produced from convoy travel on public roads (when traveling between installations and maneuver sites) would be short term as these activities are intermittent and are usually mitigated through SOPs for convoy maneuver.

4.21.6 Soil Erosion

4.21.6.1 Affected Environment

The soils at the USAG FWA are poorly developed, mainly as a result of the cold climate and the relatively young age of parent materials (compared to elsewhere in the U.S.). Swanson and Mungoven (2001) characterized the soils based on their parent material properties, consisting of alluvium, loess, and bedrock. The soil surface generally contains an organic layer of peat (made up of decaying plant and animal matter) built up on cold and wet soils. The cold temperatures for much of the year inhibit decomposition.

USAG FWA conducts both planning level soil surveys and soil resource monitoring. The first program, planning level surveys, inventories the soil and topography resources present across the entire installation. The ITAM program conducts annual monitoring of soils and vegetation through the RTLA program. Current and past disturbance resulting from military training and recreational use is delineated and quantified in terms of “land condition.” Annual RTLA reports detail the levels of disturbance and land condition on USAG FWA. Soil resources management for Interior Alaska sites consists primarily of prevention activities and actual restoration of disturbed areas. The ITAM Five Year Management Plan contains BMPs, which are utilized in conjunction with installation stormwater pollution prevention techniques. Restoration of disturbed areas is conducted through installation management erosion control and streambank stabilization programs, as well as through the LRAM program (USAG Alaska, 2007 - 2011).

The USAG Alaska INRMP (2007 - 2011) indicates that the military impact is greatest on soil productivity in the USAG FWA main post area due to construction. Soil disturbance has been minimally found around small arms ranges, roads, and other facilities; however, the soils at Stuart Creek Impact Area in the YTA have been exposed to erosion as a result of military activities and construction. Army activities have had limited impact on soils at USAG FWA. Throughout the post, the presence of permafrost produces a higher bearing strength to soils when they are frozen; but when those soils have thawed, they experience compaction problems and rutting which can increase sheet and rill erosion. The presence of permafrost and loess, which has very small pore space, works to inhibit drainage and may lend to a very low bearing strength when those soils are thawed. In addition to the garrison’s INRMP, detailed information on the characterization of soils at USAG FWA may also be found in the *Ecological Land Survey for Fort Wainwright* (Jorgenson et al., 1999).

The soils at TFTA have been formed from various unconsolidated materials. These soils are distributed in elongated meander scars and in broad basins. Generally, coarse gravel may be found at the heads of alluvial fans where soils are well drained; and sand and silt can be found at the base of alluvial fans where soils are poorly drained. The permafrost layer there may lie approximately as low as 20 inches below the soil surface and may be as thick as 128 feet. Permafrost is not present beneath the rivers and lakes but generally exists where there is an absence of surface water or circulating groundwater. TFTA is more frequently used for maneuver training during winter because the presence of snow acts as a protective layer against impacts to permafrost. TFTA has both continuous and discontinuous areas of permafrost. The permafrost layer is susceptible to thermokarst as a result of disturbance of surface soils and vegetation removal.

At YTA, the south slopes of mountains consist of soils that are well drained and composed mainly of silt and loams (generally free of permafrost). Where the silt loams may be shallow near ridge tops and mid-slopes, they may be deeper on lower slopes. The bottoms of depressions have shallow gravelly silt loam covered with a thick layer of peat underlain by permafrost. YTA is located in a discontinuous permafrost zone where perennially frozen soils are widespread. Permafrost may be absent on hill tops and south-facing mountain slopes. Similar to TFTA, areas of unfrozen ground lie beneath large waterbodies.

A comprehensive soil survey was completed for DTA in 2005. Glacial and alluvial processes, as well as isolated discontinuous patches of permafrost, primarily formed soils in the DTA. Generally, soils at DTA are derived from glacial actions and modified by streams and discontinuous permafrost. Soils in the northern, west-central, and eastern portions of DTA are silt loam associations, while DTA East is predominantly shallow silt loam over gravelly sand. Soils in the river floodplains consist of alternate layers of sand, silt loam, and gravelly sand. Highly organic wet soils, underlain by permafrost, and having a high water table characterize muskeg soils. Upland foothills have moist, loamy soils, while mountain soils are rocky, steep, and unvegetated (USAG Alaska, 2007 - 2011). Soils on river floodplains in the DTA comprise alternate layers of sand, silt-loam, and gravelly sand. Floodplain soils are known to have moderate erosion potential, while foothill soils have moderate to high erosion potential. Permafrost is found in irregular patches throughout a large portion of the DTA, particularly in morainal areas where slope and aspect change abruptly (Jorgenson et. al., 2001). Predicting permafrost in the DTA is difficult due to heterogeneous soil types, topography, and microclimate variability. Areas containing existing and abandoned river channels, lakes, wetlands, and other low-lying areas tend to be free of permafrost. Known isolated patches of permafrost are found from 2 to 40 feet below ground surface, with thicknesses varying from 10 to 118 feet, underlying sandy gravel in the alluvial plains. Permafrost controls groundwater movement in these areas.

4.21.6.2 Environmental Consequences

No Action Alternative

Minor adverse impacts are anticipated under the No Action Alternative. USAG FWA would continue its infantry and mechanized Stryker training, to include impacts to soils from removal of or damage to vegetation, digging activities, ground disturbance from vehicles, and ammunition or explosives used in training events. The installation's ITAM program conducts monitoring, rehabilitation, and maintenance and repair on areas of high use such as drop zones, artillery firing positions, observation points, and ranges.

Alternative 1: Force Reduction (up to 4,900 Soldiers and Army Civilians)

Impacts from soil erosion are anticipated to be minor. Alternative 1 includes the reduction of no longer needed facilities that could result in short-term adverse impacts from demolition and temporary exposure of bare soils to rain and water and wind erosion; however, these impacts would be short term in duration. Exposed areas of soil after demolition would likely be reseeded with native species to reduce the impacts from fugitive dust. Consequently, minor soil erosion impacts from deconstruction activities at USAG FWA are anticipated.

The number of required live-fire user days per year at USAG FWA would drop below current levels. Weapons firing can involve the disturbance of vegetation and soils, which can cause increases in soil erosion rates. Implementation of the INRMP and ITAM program work plans and associated management practices, along with additional soil erosion mitigation measures would continue. Consequently, impacts to soil erosion from a reduction in live-fire training would be negligible to minor impact as fewer opportunities for soil erosion would occur.

The intensity and frequency of maneuver training at USAG FWA would also decrease below current levels. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at USAG FWA. Implementation of the INRMP and ITAM program work plans and associated management practices along with additional soil erosion mitigation measures would continue. Consequently, impacts to soil erosion from a reduction in live-fire training would be minor.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Minor impacts to soil resources at USAG FWA are anticipated resulting from the implementation of Alternative 2. Alternative 2 would involve the demolition of some facilities and construction of new facilities within the existing cantonment area resulting in short and long-term minor impacts. Short-term impacts would occur as infill among existing structures within the main cantonment area where stormwater management practices may already be in place to mitigate potential adverse effects from sediment runoff. Fugitive dust may also occur, but impacts from dust would likely to be localized and not have any lasting adverse effects to nearby waterbodies. Long-term effects could occur from the compaction of soils, reducing the likelihood for vegetation to re-establish itself and increasing the effects from wind erosion or precipitation. Soils transported away from the construction area may accumulate in gullies or to other areas where post-precipitation event water may carry sediments to other waterbodies. Other direct long-term effects would include a change in soil function due to permanent modification of the area (construction of a building on top of previously undisturbed soil).

Range construction and expansion projects would have similar impacts to soils as would cantonment construction. Heavy construction machinery or vehicles would disturb the soil surface through excavation, digging of wheels into the surface media, and physically moving soils from place to place. Short-term effects would occur from soil transport and loading into nearby waterbodies. Fugitive dust may also occur; however, impacts from dust would likely be localized and not have any lasting adverse effects to nearby waterbodies. Due to the relatively high occurrence of surface water and wetlands at DTA, construction may need to occur in the wintertime to mitigate any adverse effects from soil transport. Long-term minor direct effects would occur from the loss of vegetation, exposing the soils beneath; and may also include the compaction of some soils making it difficult to support future vegetative growth; and permanent modification of soil function. The installation would continue to use existing construction BMPs to mitigate any potential effects.

Implementation of Alternative 2 would increase the frequency of live-fire activities on ranges, potentially causing a greater amount of soil disturbance. Weapons firing typically involve the disturbance of soils, denuding the soil surface of vegetation and increasing the erodibility of soils. USAG FWA DPW staff monitors impacts from live-fire activities and would continue to institute the required mitigations and BMPs (such as berm revegetation and regrading) to minimize sediment migration off the firing ranges.

For Combat Support units, the use of ordnance or explosives could cause wildfires resulting in the removal of vegetation that normally protects soil from erosion. The presence of vegetation slows surface water runoff by intercepting raindrops before they reach the soil surface, and works to anchor the soil with roots. Without surface vegetation, the top layer of soils may be transported away due to natural processes, and the soil remaining may become compacted leaving little opportunity for vegetation to re-establish itself. Vegetation removal resulting from wildland fires could result in increased soil erosion by water and wind, indirectly causing large-scale removal and redeposition of soils, gullying, or unstable slopes in areas of steep slopes and rapid runoff. The impact would be directly proportional to the size of the fire. Fuel maps were created indicating concentrations of fire-prone vegetation and areas recommended for hazard fuel reduction projects; these may be found in the 2004 *USARAK Transformation EIS*.

Units operating at impact areas in the summer can directly create craters and remove patches of vegetation, which normally protect soil from erosion by slowing runoff, intercepting raindrops before they reach the soil surface, and anchoring the soil. Compaction in the craters caused by larger ordnance explosions can alter the permeability and water-holding capacity of the soils affecting the ability of vegetation to recover in those areas. These direct impacts indirectly create large areas of bare ground and exposed soils that are susceptible to wind and water erosion, which can indirectly cause large-scale removal and redeposition of soils, gullying, or unstable slopes in areas of steep slopes and rapid runoff. Although weapons training events would be periodic, long-term impacts are anticipated because soil disturbance typically requires time and effort to amend.

The addition of 1,000 Soldiers may increase the frequency of maneuvers by 10 to 20 percent. The increase in maneuver frequency is anticipated to correlate with resulting damage to vegetation and disturb soils to an extent that would increase soil erosion rates and alter drainage patterns in the training areas. This could lead to gullying, and indirectly to downstream sedimentation, particularly when the vehicles travel off-road.

Alternative 2 involves travel on existing roads and trails that is anticipated to lead to very limited new soil erosion impacts. Activities associated with any Combat Support units could have adverse impacts to off-road areas that may include the use of heavy construction equipment and explosives to clear land and obstacles for training. Direct effects may occur from removal of vegetation and soil displacement or disruption. These activities may indirectly impact the permafrost layers.

Between USAG FWA's main post and its training areas (DTA, TFTA, and YTA) the installation has more than 1 million maneuver acres and is capable of handling brigade-level training; and more than capable of handling maneuver associated as a result of this alternative. The Army has developed a methodology for estimating the collective impact of all mission and training activities (training load) on soil erosion on a specific parcel of land. The methodology uses a measure called MIM, and it is calculated using a series of factors that assess the impact of a training event. At certain locations, the anticipated MIM requirement associated with a growth scenario would slightly exceed the MIM summer capacity. However, MIMs and training would be spread over a large land areas and training area use would be rotated if necessary to reduce maneuver damage to soils, resulting in a negligible to minor impact.

Training maneuvers in Alaska are often conducted more frequently in the winter months when the ground is frozen to reduce impacts from soil erosion and to waterbodies. The USAG FWA has BMPs in place to avoid impacts to permafrost, these include avoiding areas where permafrost is known or thought to occur during warmer weather conditions, and the limitation of maneuver over permafrost to wintertime when snow depth is sufficient enough to ensure an insulating layer can support maneuver while maintaining the integrity of the permafrost below.

The USAG FWA is currently undertaking a project to improve roads and trails at DTA East. Currently, DTA West can only be accessed via vehicle in the winter because there is no bridge across the Delta River that would allow year-round access. The USAG FWA also currently maintains a maneuver corridor that connects DTA West with TFTA, but generally it is used during the winter.

Maneuvers may occur more frequently at TFTA during wintertime when soils are less affected. While maneuver could disrupt soil surfaces, training in TFTA would most likely occur when the ground is frozen and a layer of snow is covering the ground that would protect the soil surface and could act as an insulating layer against adverse effects to permafrost.

YTA is generally used year-round for light vehicle maneuver. Long-term effects may occur as more vehicles on the ranges there may dig into soils, disrupting the surface and removing vegetation. The ITAM program in conjunction with regular range maintenance would prevent this from occurring. Wintertime training is supported there for most other vehicle maneuver. Although rutting and disruption to soils is less significant during the colder temperatures, the potential exists for some damage to occur to vegetation, which may have indirect impacts to the permafrost layer below.

During summer months, there is a great deal more open or standing water located on USAG FWA. During the warmer seasons the risk of sediment transport and loading to waterbodies on the installation is much greater. In many areas, maneuver is reduced or restricted to minimize or eliminate effects of training to water and to the soils underlain with permafrost. The amount of land available on which to train is reduced significantly in some areas during the summer months.

4.21.7 Biological Resources (Vegetation, Wildlife, Threatened and Endangered Species)

4.21.7.1 Affected Environment

***Vegetation*.** Vegetation inventory efforts are accomplished by conducting comprehensive "fence line-to-fence line" flora and vegetation community planning level surveys. Vegetation monitoring is accomplished through the RTLA program. USAG FWA conducts a baseline floristic survey at least once every 10 years to identify all vegetative species that occur on all USAG FWA lands. Floristic inventory activities set the foundation on which many decisions regarding land management are based.

A comprehensive survey of rare plants was included as part of the floristic inventory for USAG FWA conducted in 1995, and released in 1996, indicated that there were no federally-listed endangered or threatened plant species on USAG FWA. The survey report indicated that there are 491 plant species identified by the inventory, of which 16 species are currently recognized as "rare" by the Alaska Natural Heritage Program. A floristic survey of DTA was conducted in 1997. There are 497 plant species identified of which 17 species are currently recognized as "rare" by the Alaska Natural Heritage Program. Two plant species are ranked in USAG FWA short-list of Species of Concern for ecosystem management; these are the *Carex sychnocephala,* which is rare and critically imperiled in Alaska; and the *Dodecatheon pulcchellum pauciflorum*.

USAG FWA has four vegetation types: moist tundra; treeless bogs and fens; open, low-growing spruce forests; and closed spruce-hardwood forests. The white spruce-paper birch forest of Interior Alaska is often called the boreal forest or taiga. Higher elevations on north-facing slopes are dominated by Black spruce; these are also found on lower hydric slopes. Above the treeline is generally considered barren or tundra and are dominated by sedges and mosses on hydric soils and scrub birch and willow shrubs on arid sites.

A more detailed ecological classification of vegetation in Alaska; forest management goals and objectives and responsibilities; and a listing of flora identified throughout USAG FWA lands may be found in USAG FWA's 2007-2011 INRMP.

Fish and Wildlife. Wildlife throughout USAG FWA and its training areas include a variety of mammals and avian species including migratory birds. A greater discussion of the wildlife found on lands throughout USAG FWA may be found in Appendix E of the 2004 *USARAK Transformation EIS* (USARAK, 2004).

Priority wildlife species include the wolverine, grizzly bear, caribou, wolf, bison, moose, the Sandhill crane, waterfowl, raptors, the Gyrfalcon, White-tailed ptarmigan, Sharp-tailed grouse, Great gray owl, Boreal owl, black-backed woodpecker, American dipper, Hammond's flycatcher, Bohemian waxwing, Rusty blackbird, and the White-winged crossbill. More information on Priority species found throughout USAG FWA's cantonment and range areas are found in Section 4.10 of the 2004 *USARAK Transformation EIS* (USARAK, 2004).

No federally-listed threatened and endangered species are found on USAG FWA or its training areas; however, these areas do support priority species and Species of Concern or sensitive species. Priority bird species found at Interior Alaska sites (as identified by the Boreal Partners in Flight Working Group (1999)) are listed in Table 3.9.c of the 2004 *USARAK Transformation EIS* (USAG, Alaska 2004). Table 4.21-2 lists the Species of Concern found on USAG FWA's training areas (TFTA, YTA, DTA, GRTA); the list also includes species of management concern listed here due to the hunting interests by outside groups (USARAK, 2008).

Table 4.21-2. Species of Concern found on U.S. Army Garrison Fort Wainwright Training Lands

Training Area	Group	Species	Scientific Name
Tanana Flats Training Area	Bird	Alaska Sharp-tailed Grouse	*Tympanuchus phasianellus caurus*
	Bird	Great Gray Owl	*Strix nebulosa*
	Mammal	Wolverine	*Gulo gulo*
	Bird	Olive-sided Flycatcher	*Contopus cooperi*
	Bird	White-winged Scoter	*Melanitta fusca*
	Bird	Rusty Blackbird	*Euphagus carolinus*
	Bird	Western Wood-Pewee	*Contopus sordidulus*
	Bird	Red-winged Blackbird	*Agelaius phoeniceus*
	Bird	Yellow-bellied Sapsucker	*Sphyrapicus varius*
	Bird	Barrow's Goldeneye	*Bucephala islandica*
Yukon Training Area	Bird	Great Gray Owl	*Strix nebulosa*
	Mammal	Wolverine	*Gulo gulo*
	Bird	Olive-sided Flycatcher	*Contopus cooperi*
	Bird	White-winged Scoter	*Melanitta fusca*
	Bird	Western Wood-Pewee	*Contopus sordidulus*

Training Area	Group	Species	Scientific Name
	Bird	Yellow-bellied Sapsucker	*Sphyrapicus varius*
	Bird	Barrow's Goldeneye	*Bucephala islandica*
	Bird	Blackpoll Warbler	*Dendroica striata*
	Bird	Great Horned Owl	*Bubo virginianus*
	Bird	Black Scoter	*Melanitta nigra*
Donnelly Training Area- East	Mammal	Wolverine	*Gulo gulo*
	Bird	Boreal Owl	*Aegolius funerereus*
	Bird	White-tailed Ptarmigan	*Lagopus leucura*
	Bird	Surfbird	*Aphriza virgata*
	Bird	Wilson's Snipe	*Gallinago delicata*
	Bird	Spruce Grouse	*Falcipennis canadensis*
	Bird	Sandhill Crane	*Grus canadensis*
	Bird	Upland Sandpiper	*Bartramia longicauda*
	Bird	Olive-sided Flycatcher	*Contopus cooperi*
	Mammal	Lynx	*Lynx canadensis*
Donnelly Training Area - West	Mammal	Wolverine	*Gulo gulo*
	Bird	Rusty Blackbird	*Euphagus carolinus*
	Bird	Boreal Owl	*Aegolius funerereus*
	Bird	Great Gray Owl	*Strix nebulosa*
	Bird	Wilson's Snipe	*Gallinago delicata*
	Bird	Spruce Grouse	*Falcipennis canadensis*
	Bird	Sandhill Crane	*Grus canadensis*
	Bird	Upland Sandpiper	*Bartramia longicauda*
	Bird	Olive-sided Flycatcher	*Contopus cooperi*
	Mammal	Lynx	*Lynx canadensis*
Gerstle River Training Area	Bird	Trumpeter Swan	*Cygnus buccinator*
	Mammal	Wolverine	*Gulo gulo*
	Bird	Rusty Blackbird	*Euphagus carolinus*
	Bird	Boreal Owl	*Aegolius funerereus*
	Bird	White-tailed Ptarmigan	*Lagopus leucura*
	Bird	Great Gray Owl	*Strix nebulosa*
	Bird	Surfbird	*Aphriza virgata*
	Bird	Wilson's Snipe	*Gallinago delicata*
	Bird	Spruce Grouse	*Falcipennis canadensis*
	Bird	Sandhill Crane	*Grus canadensis*
Species of Management Concern	Moose	These species are a separate list due to hunting interests by outside groups.	N/A
	Caribou		N/A
	Bison		N/A
	Dall Sheep		N/A
	Black Bear		N/A
	Brown Bear		N/A
	Wolf		N/A

Training Area	Group	Species	Scientific Name
	Sharp-tailed Grouse		N/A
	Ruffed Grouse		N/A
	Grayling		N/A

N/A = not applicable

Wildland Fire Management. Fire management on USAG FWA is required by the Sikes Act and by AR. Fire management plans are required by the Resource Management Plan, which is mandated under Public Law 106-65, the Military Lands Withdrawal Act. Additional direction regarding fire management is stated in a 1995 Memorandum of Understanding between the BLM and USAG FWA, as well as in the Army wildland fire policy guidance document (U.S. Army, 2002a).

These agencies developed inter-service support agreements that establish the Alaska Fire Service's responsibility for all fire detection and suppression on military installation lands (Alaska Fire Service and USAG Alaska, 1995). In exchange, the Army provides the Alaska Fire Service the use of buildings, utilities, training services, air support, and other support services.

As a part of the Alaska Wildland Fire Management Plan, which is reviewed annually, certain areas have certain fire management designations that allow the land-owners to establish fire management options (these are Critical, Full, Modified, Limited) for their lands. These are based upon the risk of wildfires to those areas, the potential for damage to occur, and the amount of monitoring required. Additional fire management option categories have been developed specifically for lands managed by USAG FWA; these include Unplanned Areas that are not officially designated but may receive service similar to the full management option (maximum detection coverage, notification, fire suppression strategies, etc.); and the Restricted Areas (Hot Zones) that include impact areas and other locations where no "on the ground" fire fighting can be conducted due to the presence of UXO or other safety hazards.

Fire-prone areas take into consideration the type of vegetation, climate, and human activity. Common "fuels" or stands of vegetation susceptible to wildfire include: Black Spruce, White Spruce, Mixed Spruce with hardwood stands, Bluejoint Reedgrass, and Tundra. For the areas on ranges that could be impacted, the installation generally uses prescribed burns and vegetation thinning to minimize the risk of wildfire.

Most of DTA West is classified for Limited fire management because few resources are at risk from fire, and USAG FWA recognizes that fire is a natural process in ecosystem function (Alaska Wildland Fire Coordinating Group, 1998). A private hunting lodge, located along the extreme western boundary of DTA West, is given full fire suppression status. The northern boundary of DTA West is classified for Modified fire management to provide a buffer to adjacent state lands that are classified under full management status. DTA West is bounded by private parcels and state lands (USAG Alaska, 2002).

DTA East is a Full fire management area due to the close proximity of the community of Delta Junction. This area is subject to high winds and extreme fire behavior, further supporting the Full fire suppression status. The Army does have structures at risk throughout DTA East. These resources have been identified and mapped. DTA East is bounded by allotments, private parcels, and state lands, including a portion of private and state land known as the "Key Hole" (USAG Alaska, 2002).

Fires are common at DTA. Fifty-nine percent of DTA has burned since 1950, and a considerable portion has burned more than once (Jorgenson et. al., 2001). Approximately 16 percent of DTA

has burned within the past 30 years, and, based on fires recorded on the installation since 1950, 1.2 percent of the area has burned annually. From 1980 to 2000, 89 fires were reported at DTA (USAG Alaska, 2002). Of these, 78 were caused by humans and 11 were due to natural causes. Eighty-eight percent of all reported fires were caused by military training activities. Two large fires occurred between 1997 and 2000. The first was a 2,500-acre fire caused by lightning in 1997, and the second was a 53,720-acre fire in 1998. The average interval for recurrence of fire for any given area varies from 100 to 150 years (USAG Alaska, 2002). In 1999, the Donnelly Flats fire burned approximately 18,000 acres of DTA East and main post.

Recent fuels management projects on DTA include the removal of dead spruce, the creation of a fuel break on the northern portion of DTA East, and a 3,000-acre prescribed burn on Texas Range. These projects reduce fuels by removing highly flammable spruce and promoting regeneration of less flammable hardwoods.

***Subsistence Activities*.** USAG FWA training areas are located in the traditional lands of Tanana and Tanacross Athabascans. While traditional Athabascan settlement patterns focused on a widely mobile and seasonal lifestyle, subsistence activities continue to be integral to the economic and nutritional well being of many households in rural Alaska. Fish and moose are primary dietary resources for residents of Interior Alaska communities near USAG FWA training lands. The fall caribou and moose hunts are pivotal in subsistence preparations for the winter, while summer activities are focused on fish camps, berry/root collecting, and sheep hunting (McKennan, 1981). Fish and moose continue to play a primary role in Interior Alaska communities near USAG FWA training lands. Plant gathering continues to be a focus in the spring, summer, and fall.

Wildlife resources are readily available at Interior Alaska sites. Due to the size and relatively remote locations of these areas, natural resources and wildlife populations are fairly well preserved. All training areas at USAG FWA host a variety of hunting and trapping activities. Customary and traditional use has been determined for the following species: brown bear, moose, beaver, coyote, red fox, hare, lynx, marten, mink and weasel, muskrat, otter, wolf, wolverine, grouse, and ptarmigan. Subsistence permits can be obtained for the take of these species (2004 *USARAK Transformation EIS* (USARAK, 2004)).

Healy Lake Village residents live a subsistence lifestyle (Alaska Department of Community and Economic Development, 2002). The village is 29 miles east of DTA.

The towns of Delta Junction and Big Delta are located adjacent to DTA at the junction of the Richardson and Alaska highways. These towns are rural and qualify for subsistence preference under current law.

Approximately 45 miles east-southeast of Delta Junction is the nonnative community of Dry Creek. According to the Alaska Department of Community and Economic Development (2002), at least 15 adult residents rely on the exploitation of natural resources and a number of Dry Creek residents can be characterized as subsistence hunters and trappers.

The Dot Lake Village is about 60 miles east-southeast of Delta Junction along the Alaska Highway. Most of the village's historic subsistence harvest areas end at the Gerstle River; however, some residents of Dot Lake travel the extra distance to hunt on DTA (Marcotte, 1991).

Recreational Hunting and Fishing. USAG FWA main post and YTA lie within the Alaska Department of Fish and Game's Game Management Subunit 20B. The TFTA lies within Game Management Subunit 20A. DTA is located within the Game Management Subunit 20A and 20D. DTA hosts annually a variety of hunting activities based on access and available big game populations. A detailed map of Game Management Subunits and the wildlife species available for hunting (and their associated seasons and regulated hunting limits) is found in the Alaska

Department of Fish and Game's 2007-2008 Alaska Hunting Regulations, No. 48 (Regulated by Title 5, Alaska Administrative Code and Title 16 of Alaska Statutes) (Alaska Department of Fish and Game, 2012).

To promote recreational activities, the Alaska Department of Fish and Game produces a "Statewide Stocking Plan for Recreational Fisheries" each year. Most ponds or lakes on USAG FWA main post, TFTA, and YTA do not support fish populations during winter as these lakes freeze completely, or, when iced over they lack sufficient dissolved oxygen for fish to survive through the winter. Sixteen lakes on DTA, ranging in size from 3 to 320 acres, are stocked. Anadromous fish stocks are not available on the training areas, but other freshwater fish can be harvested.

4.21.7.2 Environmental Consequences

No Action Alternative

Minor adverse effects would occur at USAG FWA as a result of the implementation of the No Action Alternative. USAG FWA would continue to adhere to its existing resource management plans and INRMP (2007-2011) to further minimize and monitor any potential effects. Units are briefed prior to each training event regarding sensitive areas on post, such as protected species habitat, and what is and is not allowed within certain areas.

Alternative 1: Force Reduction (up to 4,900 Soldiers and Army Civilians)

Minor impacts to biological resources are anticipated as a result of the implementation of Alternative 1. Scheduling conflicts for training area access to conduct resource monitoring would be reduced. Proactive conservation management practices and species monitoring would be more easily accomplished with reduced levels of training. The land within the main cantonment area where deconstruction would occur does not support any critical habitat, threatened or endangered species, or Species of Concern. This area is highly disturbed and used by humans daily. Activities associated with demolition actions (increase in vehicles and human presence) creates noise and disturbs wildlife; however, these activities have not shown to be detrimental to foraging behavior or reproductive success, but this observance may vary by location, species, and type of human activity (Holthuijzen et. al., 1990). Habitat destruction could occur for those species habituated to a more urbanized environment; however, wildlife species that may currently habituate these areas (such as some bird species) are likely already adapted to the human presence and may adjust. Consequently, the impacts to wildlife from deconstruction on the garrison are anticipated to be negligible or minor.

Construction vehicles operating in the cantonment area could also spill hazardous materials such as POLs onto the soil surface which could remain in the soils for an extended period of time and may enter groundwater. POLs may also be transported to surface waters with runoff from the construction site. Hazardous materials that enter the soil media and water column may have detrimental effects to the wildlife that inhabit and use these areas. USAG FWA has SWMPs in place to mitigate the effects of sediment and hazardous waste transport.

Impacts to vegetation from deconstruction can include breaking and crushing of plants and direct mortality. This can directly or indirectly alter plant community composition and structure and vegetative cover. Fugitive dust from these construction projects could occur and result in short-term impacts to vegetation. Deconstruction projects would occur in existing, disturbed cantonment areas, and there would be little or no direct impacts to native or sensitive vegetation.

Soils that are disturbed from deconstruction could be transported to surface water; thereby, causing temporary increases in turbidity, and degrading the water quality. Impacts to water

quality have direct effects to the inhabitants (fish, invertebrates) and indirect effects to the wildlife that forage for food in these areas. USAG FWA implements BMPs and SOPs to minimize the impacts from sedimentation into nearby waterbodies. Consequently, the impacts to water quality are anticipated to be negligible or minor.

Recreational activities, subsistence activities, or wildland fire management are not anticipated to be impacted from construction and deconstruction that would occur as a result of Alternative 1.

Recreational activities, subsistence activities, or wildland fire management are not anticipated to be impacted from construction and deconstruction that would occur as result of this alternative.

The number of required live-fire user days per year at USAG FWA would drop below current levels. A reduction in live-fire training related wildfires is anticipated as well as reduced impacts to fish and wildlife and vegetation. Reducing the number of Soldiers stationed at USAG FWA would open up opportunities for more recreational and subsistence activities because training areas would not be closed as often.

The intensity and frequency of maneuver training at USAG FWA would drop below current levels. In addition, no new maneuver areas would be required and maneuver training would be conducted in the footprint of existing ranges and trails at USAG FWA. Reduced impacts to fish, wildlife and vegetation would be similar to that discussed for live-fire training. Reducing the number of Soldiers stationed at USAG FWA would open up opportunities for more recreational and subsistence activities because training areas would not be closed as often.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Minor adverse impacts are anticipated as a result of the implementation of Alternative 2. The increase in the number of Soldiers is less than 15 percent above the current level. While this moderate force augmentation would increase traffic in the training lands and ranges, it would not cause significant degradation or destruction of rare or sensitive species habitats. The land within the main cantonment area where construction and deconstruction would occur does not support any critical habitat, threatened and endangered species, or Species of Concern. Construction would occur as infill within the main cantonment area. This area is highly disturbed and used by humans daily. Habitat destruction could occur for those species habituated to a more urbanized environment; however, wildlife species that may currently habituate these areas (such as some bird species) are likely already adapted to the human presence and may adjust.

Construction activities (increase in vehicles and human presence) create noise and disturbs wildlife; however, these activities have not shown to be detrimental to foraging behavior or reproductive success; but, this observance may vary by location, species, and type of human activity (Holthuijzen et. al., 1990). Construction vehicles operating in the cantonment area could also spill hazardous materials such as POLs onto the soil surface which could remain in the soils for an extended period of time and may enter groundwater. POLs may also be transported to surface waters with runoff from the construction site. Hazardous materials that enter the soil media and water column may have detrimental effects to the wildlife that inhabit and use these areas. USAG FWA has SWMPs in place to mitigate the effects of sediment and hazardous waste transport.

Impacts to vegetation from construction and deconstruction and training can include vegetation shear or clearance. This can directly or indirectly alter plant community composition, structure and vegetative cover, and can lead to increased presence of invasive species. Fugitive dust from these construction projects could occur and result in short-term impacts to vegetation. Construction and deconstruction projects would occur in existing, disturbed cantonment areas, and there would be little or no direct impacts to native or sensitive vegetation. New construction

to the north and in the southeast corner of the installation cantonment area may be needed. Clearing of vegetation and soils may lead to the movement of animals away from the construction site.

Soils that are disturbed could be transported to surface water; thereby, causing temporary increases in turbidity, and degrading the water quality. Impacts to water quality have direct effects to the inhabitants (fish, invertebrates) and indirect effects to the wildlife that forage for food in these areas.

Recreational activities, subsistence activities, or wildland fire management are not anticipated to be impacted from construction and deconstruction that would occur as a result of this alternative.

The removal of native vegetation could result in the introduction of invasive weed or non-native plant species. Equipment and vehicles could introduce these species in tire tread (as seeds) or among construction materials. Management of invasive plant species is an issue of concern on USAG FWA lands. The RTLA program monitors vegetation and documents invasive plant species. These species are managed using integrated pest management techniques, whereby chemical control is minimized.

Construction noise on the USAG FWA lands could temporarily impact wildlife species using these areas for shelter and foraging. Some species of priority, which includes moose and waterfowl could be temporarily driven away due to the construction noise; however, most species would return due to the availability of food and shelter.

An increase in training infrastructure construction may close training areas to recreational activities and subsistence activities for short periods of time. Consequently, these impacts are anticipated to be negligible or minor.

The frequency and intensity of live-fire training in the USAG FWA small arms range complex would increase by approximately 10 to 20 percent. Units would use the same weapons systems that are currently being utilized at USAG FWA and qualitatively noise generating events would be the same. Wildlife using these areas would adjust to any live-fire training modifications and short-term effects are anticipated. These may include the temporary avoidance of live-fire areas and the scattering of smaller mammals when firing is first initiated.

Impacts from live-fire activities would also include the disturbance of soils and vegetation on ranges, increasing the erodibility of soils and requiring more monitoring and maintenance. Live-fire training could increase the frequency of wildfires. Several fire mitigation measures, such as prescribed burning and hazard fuels reduction, are being implemented throughout the USAG FWA on existing ranges and would be continued under all stationing alternatives. USAG FWA is only subject to wildfire risk as certain times of year and this risk is greatly reduced during the winter, spring melt, and fall seasons. In general, the wet conditions reduce the overall fire risk. Impacts to wildland fire management from an increase in live-fire training are anticipated to be negligible or minor.

The TFTA has one of the most dense moose populations in the state. Impact areas within this training area have suitable moose habitat. Many of the ungulate species found throughout Alaska training lands do not avoid live-fire training areas due to the readily available vegetation providing favorable foraging conditions. Direct impacts to moose and other wildlife species would be reduced by practicing avoidance of wildlife when possible in accordance with USARAK regulations (USARAK 350-2).

The increased frequency of live-fire training may also result in restrictions to recreational and subsistence activities on USAG FWA lands. Overall impacts on subsistence may occur

because of the anticipated increase in access closures and the potential disruption or partial migration of wildlife. The USAG FWA would continue to identify areas available to the public and offer access for recreational and subsistence use. Additional personnel stationed at USAG FWA might participate in recreational hunting and fishing activities and could impact current availability of subsistence resources on Interior Alaska lands. An increase in hunting interest would compete with existing recreational hunters. The impacts to recreational activities and subsistence activities are anticipated to be negligible or minor.

The frequency of maneuver training could increase by approximately 10 to 20 percent. Units would support combat maneuver units by providing logistics support, mainly on roads and hardened surfaces. The increase in maneuver mileage would result in relatively minor effects to the existing range road network. Potential direct impacts include damage to soil surface and causing disruption to the permafrost layer below. Disruption of soils may create situations where permafrost melts, resulting in saturated conditions or subsidence. The potential for this occurs on frozen soils particularly when the permafrost is shallow. USAG FWA has BMPs in place to avoid impacts to permafrost, these include avoiding areas where permafrost is known or thought to occur during warmer weather conditions, and the limitation of maneuver over permafrost to wintertime when snow depth is sufficient enough to ensure an insulating layer can support maneuver while maintaining the integrity of the permafrost below. Any impacts to permafrost may considerably alter the landscape and habitat in training areas, but these areas are avoided when possible and limited impacts would be anticipated as Combat Service Support units would mostly use existing roads and trails.

The higher rate of maneuvers may have short-term immediate impacts to wildlife from the additional noise; however, these impacts may be temporary as training with these alternatives would not introduce new types of weapons to the range areas, and would not increase the level of noise above what is heard currently on ranges. As cited above, wildlife would likely quickly adjust to the new training schedules. Wildlife populations would be able to tolerate some disturbance from vehicular traffic; however, information available currently is insufficient to determine the extent of population-wide effects. Wildlife would be closely monitored by USAG FWA's ecosystem management program to understand better the impacts and the extent of disturbance resulting from increased road use.

Increases in maneuver training frequency could temporarily affect the distribution of moose. Moose appear well adapted to multiple use management (forestry, hunting, and military activities), and military training seems no more detrimental to moose populations than other land uses (Andersen et. al., 1996). Impacts to moose populations are potentially significant if winter habitats were degraded; however, moose are readily adaptable to the creation of new early succession habitat.

Maneuver training would also result in negligible or minor impacts to fisheries. Anticipated increases in training levels could lead to higher rates of erosion and sedimentation, as well as an increased potential for petroleum spills during refueling. Implementation of the USAG FWA institutional programs as well as INRMP and ITAM program work plans and associated management practices along with additional soil erosion mitigation measures would continue to ensure soil erosion-related impacts caused by maneuver training would be negligible or minor.

Wildfire ignition from vehicle use and human activity may occur. Mitigation measures currently utilized by the USAG FWA are designed to prepare the landscape for impending wildfires. Patches of thinned trees and controlled burns in high-risk areas may slow wildfire intensity and speed. Impacts to wildland fire management from an increase in maneuver training are anticipated to be negligible or minor.

The increased frequency of maneuver training may also result in restrictions to recreational and subsistence uses of USAG FWA lands. Overall impacts on subsistence may occur because of the anticipated increase in access closures and the potential disruption or partial migration of wildlife. The USAG FWA would continue to identify areas available to the public and offer access for recreational and subsistence use. Additional personnel stationed at USAG FWA might participate in recreational hunting and fishing activities and could impact current availability of subsistence resources on Interior Alaska lands. An increase in hunting interest would compete with existing recreational hunters.

4.21.8 Wetlands

4.21.8.1 Affected Environment

From the years 2000 to 2005, USAG Alaska obtained a permit to conduct training in wetlands at USAG FWA, including its training areas: TFTA, YTA, and DTA. The permit specified that the Army could damage no more than 40 acres of wetlands per year and carried penalties for exceeding that amount. While this permit is no longer in effect, USAG FWA is currently working towards a renewal. In the interim, USAG FWA remains diligent in protecting and preserving these resources.

USAG FWA main post has approximately 6,500 acres of palustrine, riverine, and lacustrine-type wetlands. Wetlands comprise approximately 483,500 acres (74 percent) of the TFTA, and YTA has 42,600 acres (17 percent) classified as wetlands. DTA has an estimated 431,940 acres of wetlands with palustrine, riverine, and lacustrine types identified. The 431,940 acres equates to about 68 percent of the entire DTA.

An environmental limitations overlay has been developed as a tool for planning military training activities and managing wetlands. Each overlay is available for winter and summer training for activities which can or cannot occur. This simplified system assists the Range Control in determining what training areas can be used during a particular season and assists in planning for future training activities. Table 4.21-3 describes the wetland types found at USAG FWA and Interior Alaska training areas. More discussion of wetlands on USAG FWA lands may be found in the USAG Alaska INRMP 2007-2011 and the 2004 *USARAK Transformation EIS* (USARAK, 2004).

Table 4.21-3. Wetland Types Found at U.S. Army Garrison Fort Wainwright and Interior Alaska Training Areas

Wetland Type	Percent of Total Wetlands	Wetland Characterization and/or Location	Vegetation
U.S, Army Garrison Fort Wainwright Main Post			
Palustrine, riverine, lacustrine	42	Bogs, fens, marshes with wide distribution around the post.	Bogs generally are sphagnum, sedge, or sheathed cottonsedge. Understory vegetation is primarily dwarf birch, bog rosemary, Labrador tea, low bush cranberry, and willows.
Tanana Flats Training Area			
Lowland Tussock Bog	3	Poorly drained due to permafrost.	Sites are canopy of shrubs and tussocks of cottonsedge.
Fens	7	Poorly drained.	Vegetation is dominated by floating mats of sedges, grasses, horsetails, herbaceous broadleaf

Wetland Type	Percent of Total Wetlands	Wetland Characterization and/or Location	Vegetation
			forbs. Willows and birches may also be present.
Lowland Wet Needleleaf Forest	25	Wet or loamy organic soils.	Black spruce, white spruce, and occasional tamarack.
Lowland Forest and Scrub Thermokarst Complexes	27	Abandoned floodplains and collapsed bog scars.	Forest, scrub, bog, and fen plant communities.
Riverine and Lacustrine Complexes	9	Moist loamy soils.	Needleleaf, broadleaf, or mixed forests; shrubs; or meadows.
Other Wetlands	3	Various upland ecotypes.	Variety of vegetation.
Yukon Training Area			
Shrub Wetlands	2	Poorly drained soils that may be underlain by permafrost; generally found along South Fork Chena River lowlands, the Stuart Creek Impact Area, and the French Moose Creek area.	Alder and willow.
Lowland Wet Needleleaf Forest	11	Wet loamy soils to organic soils that are slightly acidic and poorly drained; found in low-lying areas and creek floodplains.	Black spruce and ericaceous shrubs.
Wetland Upland Complex	27	Determined that most middle and lower portions of north-facing slopes in the wetland/upland complex of YTA are likely wetlands.	--
Donnelly Training Area			
Alpine Tussock Meadow and Alpine Wet Low Scrub	6	Underlain with permafrost; moderately to strongly acidic. Found above the treeline, primarily in the southern portion of DTA west along the foothills of the Alaska Range.	Sedges, Dwarf birch, Willow, Ericaceous shrubs, and Sphagnum moss.
Lowland Wet Low Scrub and Lowland Tussock Scrub Bog	35	Poorly drained due to permafrost. Found above the treeline, primarily in the southern portion of DTA west along the foothills of the Alaska Range.	Willows, Dwarf birches, Ericaceous shrubs, Black spruce, and Sphagnum moss.
Lowland Wet Needleleaf Forests	12	Poorly drained due to permafrost; moderately acidic. Common along the northern portion of the Lakes Impact Area and the Little Delta Training Area.	Ericaceous shrubs, Black spruce, and Sphagnum moss.
Riverine and	7	Common along the Delta and	Forest broadleaf, needleleaf, or

Wetland Type	Percent of Total Wetlands	Wetland Characterization and/or Location	Vegetation
Lacustrine Wetland Complexes		Little Delta rivers and Jarvis Creek, ponds, lakes, and their margins.	mixed shrubs, Willows and Alders, grasses, and sedges.

4.21.8.2 Environmental Consequences

No Action Alternative

Minor impacts to wetlands are anticipated under the No Action Alternative. Wetlands would be impacted through training, sedimentation, and construction to a minor extent each year.

Alternative 1: Force Reduction (up to 4,900 Soldiers and Army Civilians)

Minor impacts are anticipated as a result of the implementation of Alternative 1. Deconstruction of facilities could result in sedimentation into adjacent wetlands. The impacts would likely be negligible or minor because the USAG FWA has SWMPs in place to mitigate the effects of sediment transport. No new range construction would occur. In addition, none of the current ranges would be expanded; therefore, no effects to wetlands are anticipated.

The number of required live-fire and maneuver training user days per year at USAG FWA would drop below current levels. Because the live-fire ranges were located to avoid significant wetland impacts, continued live-fire training is not anticipated to affect the function or presence of wetlands at USAG FWA. No new maneuver areas would be required and maneuver training would be conducted in the footprint of existing or previously approved ranges and trails at USAG FWA. Consequently, no change in impacts to wetlands from maneuver training is anticipated.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Overall, minor impacts are anticipated as a result of the implementation of Alternative 2.

Garrison Construction and Deconstruction. Impacts to USAG FWA would depend on siting of new facilities to accommodate growth. Construction that occurs north of the Tanana River could directly impact wetland areas or surface waters as a result of required fill activities to support facility construction. Also, the removal of upland vegetation as a result of clearing activities could result in adjacent wetland degradation due to increased sediment loading during rain events while construction is taking place. The effects from construction would be less harmful in winter due to the frozen nature of the wetlands, and the snowpack that protects vegetation. The impacts would likely be negligible or minor because the USAG FWA has SWMPs in place to mitigate the effects of sediment transport.

Training Infrastructure Construction. The USAG FWA takes precaution when siting a range to avoid impacts to wetlands where possible. In areas where filling of wetlands is unavoidable, these areas would likely be filled, or the vegetative cover would be altered. The USAG FWA implements BMPs and SOPs to minimize impacts on wetlands. If wetlands cannot be avoided, impacts can be minimized by following appropriate permit stipulations from the USACE which may require mitigation.

Heavy equipment and vehicles in the range area could remove vegetation and disturb soils, making them prone to erosion and creating runoff to nearby surface water and wetlands. Disturbed and compacted soils may also affect seedling establishment and near surface hydrology which may inhibit the re-establishment of plant communities. The impacts would likely

be negligible or minor because the USAG FWA has SWMPs in place to mitigate the effects of sediment transport into nearby wetlands.

Live-Fire Training. Impacts could occur to wetlands on the range area in the form of munitions constituent loading and sedimentation in wetlands located on USAG FWA firing ranges. These impacts are anticipated to be negligible or minor.

Maneuver Training. Combat Service Support maneuver scenarios would lead to minimal additional impacts to wetlands at USAG FWA. Increased use of un-improved trails would result in more sediment loading into adjacent wetlands and surface waters, though the overall increase in use would be anticipated to be minimal. No additional roads or trails would be constructed; therefore, only minor impacts to nearby wetlands from runoff are anticipated. Combat Support units could adversely affect wetlands through off-road maneuver of heavy vehicles, or increased sediment loading through surface excavation. Maneuver training from even light use can also impact the hydrology of an area by changing water flow and creating linear palustrine wetlands over several short years. Impacts to wetlands at USAG FWA are anticipated to be negligible or minor due to the use of avoidance practices, mitigation, and BMPs.

4.21.9 Water Resources

4.21.9.1 Affected Environment

Watershed. The Chena River originates in the non-glaciated Yukon-Tanana Uplands and passes through USAG FWA main post. The U.S. Geological Survey maintains a gauging station on the Chena River. The Chena River has been classified as Class A, Class B, and Class C. The pH varies seasonally from neutral to slightly below neutral. Groundwater flow varies greatly based on location. Groundwater quality is predominantly good on USAG FWA, although past military activities have degraded groundwater in some locations that are currently undergoing remediation (these areas have contributed to USAG FWA main post having been classified as a CERCLA site). Groundwater on USAG FWA main post is classified as an alluvial aquifer, fed primarily from the Tanana River. Groundwater there does contain high levels of metals, especially iron and arsenic. Elevated arsenic levels are prevalent in upland areas. These metals are naturally occurring and are not related to human-caused pollution.

TFTA is within the Tanana River watershed, and the river comprises the eastern and northern boundary of the training area; and the Wood River forms the training area's western boundary. TFTA contains a number of small lakes and ponds including the Blair Lakes covering approximately 2,718 acres. Much of this is considered wetlands. USAG FWA also employs the use of ice bridges over the Tanana and Delta rivers, Jarvis, McDonald, Dry, and Clear creeks, and Salchaket Slough, to provide access in and around TFTA and DTA during the winter months.

The Little Chena River flows northwest of YTA. All streams at the training area originate in the Yukon-Tanana Uplands, which are non-glaciated. Streams located in the northern portion of YTA drain into the Chena River; whereas streams originating in the southeastern portions of YTA drain into the Salcha River, a tributary of the Tanana River. YTA has many small lakes and wetlands that cover about 498 acres.

DTA is located within the Tanana Basin watershed, an Interior glacial waterway. There are four main rivers crossing DTA: from east to west they are: Jarvis Creek, Delta River, Delta Creek, and Little Delta River. The Delta River flows northward 80 miles from its headwaters to its confluence with the Tanana River and runs through the DTA for an estimated 30 miles. It drains an area approximately 1,650 square miles. Due to the combination of glacial and non-glacial inputs, the Delta River is difficult to classify as specifically glacial or non-glacial in nature. Jarvis

Creek originates at the terminus of Jarvis Glacier on the north side of the Alaska Range and flows northward for 40 miles through a narrow valley before passing through DTA East. The creek drains an estimated area of 248 square miles and receives glacial meltwater from Riley and Little Gold creeks. McCumber Creek and Morningstar Creek are non-glacial streams that enter Jarvis Creek from the Granite Mountains as it passes through DTA. Jarvis Creek flows across the same alluvial fan as the Delta River before converging with the river. Surface water quality for drinking water purposes on DTA meet the primary drinking water standards set by the Alaska Drinking Water Standards (18 AAC 80); however, aluminum, iron, and manganese concentrations were higher than the state's secondary standards. DTA water is of calcium carbonate type and is slightly basic. The pH measurements collected on DTA range from 7.9 to 8.4 standard units which are within the state's established limits of 6.5 to 8.5 standard units.

Water Supply. Water for USAG FWA is supplied to the installation through a series of subsurface wells and passed through the on-site water treatment plant. The water treatment plant consists of a small pressurized green sand filter plant connected to the water distribution system. During the summer the average flow is 2.7 mgd whereas in winter the average water flow is approximately 1.9 to 2.0 mgd. The flow of water through the treatment plant can be limited by quality or number of filters used by the plant to treat the water. The private utilities contractor is the owner and operator of the utility system at USAG FWA.

Water for DTA is provided by wells that yield as much as 1,500 gpm. Well testing indicates that permafrost generally does not extend into the saturated zone and does not act as a confining layer. The water table is located closer to the ground surface and has a seasonal fluctuation of 20 to 60 feet resulting from recharge and from precipitation.

***Wastewater*.** USAG FWA has an on-site wastewater collection system that is discharged into the Golden Heart Utilities wastewater system through a central lift station. Fairbanks Sewer and Water is the parent company for Golden Heart Utilities WWTP, which provides service to more than 55,000 people and operates at a capacity of approximately 8.0 mgd (Utility Services of Alaska, Inc., 2012). The wastewater collection system at DTA is connected to a small lagoon treatment facility.

***Stormwater*.** Soil resources management on USAG FWA is achieved through implementing soil loss and disturbance prevention activities and BMPs in agreement with industry standard installation stormwater pollution prevention techniques and actual restoration of disturbed areas. Disturbed areas are stabilized by both erosion control and stream bank stabilization activities, which control installation sources of dust, runoff, silt, and erosion debris in an effort to prevent damage to land, water, and air resources; equipment; and facilities (including those on adjacent properties). Relevant BMPs used at USAG FWA are detailed in the INRMP and in the ITAM Five Year Management Plan (USAG Alaska, 2005). There have been no Notices of Violation issued to USAG FWA for stormwater compliance violations in the last 5 years.

4.21.9.2 Environmental Consequences

No Action Alternative

Impacts to water resources would be minor. USAG FWA currently has plenty of potable and non-potable water to support its Soldiers, Families and missions.

Alternative 1: Force Reduction (up to 4,900 and Army Civilians)

Minor impacts are anticipated as a result of the implementation of Alternative 1. An increase in facilities demolition at USAG FWA would occur as a result of this alternative. USAG FWA would continue to implement its current BMPs, SPCC Plan, and SWPPP measures to address the ongoing effects of demolition and training on water resources. Negligible to minor impacts to

water resources at USAG FWA ranges are anticipated. In addition, the intensity and frequency of maneuver training at USAG FWA would drop below current levels and reduced effects to surface water from sedimentation resulting from maneuver training would be anticipated. A reduction in Soldiers and civilian employees would reduce water demand and also wastewater treatment requirements.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be minor impacts to water resources anticipated as a result of implementing Alternative 2. Construction and deconstruction activities could affect surface water by localized increases in erosion and runoff. Potential impacts would include increased overland flow and runoff and decreased percolation to groundwater due to surface compaction. Impacts from construction runoff are anticipated to be temporary. USAG FWA has a robust stormwater monitoring and compliance program, and is prepared to handle additional capacity. Any construction and deconstruction that disturbs more than 1 acre of land would require a SWPPP including use of BMPs to minimize pollution. Water demand would be anticipated to increase by up to 250,000 gpd on post. The current water supply could meet an increased number of Soldiers. Additionally, there is the available WWTP capacity to treat the estimated additional 275,000 gpd of wastewater that would be generated by Soldiers, civilians and their dependents.

Operation of construction vehicles could cause spills of POLs and other hazardous and toxic substances, which could result in indirect impacts to surface and/or groundwater if accidentally released into the environment. The Army has implemented BMPs, an SPCC Plan, and an SWPPP to address leaks or spills of hazardous materials.

The risk of wildfires is anticipated to remain at about the same level as under existing conditions or slightly higher due to the increase in Soldiers using these ranges. Wildfires can generate chemical contaminants, and loss of vegetation can increase the potential for soil erosion and sediment loading to streams resulting in impacts to water quality.

Additional traffic on the range road network and stream crossings during maneuver training may contribute to increased sedimentation and turbidity in waterbodies. Efforts may be considered to reinforce stream crossings and ice bridge approaches and monitor those areas for decreased water quality. Further, bivouac sites in the training area may also need to be monitored and maintained more closely to ensure against stormwater runoff that may stem from the effects of increased Soldier use throughout those areas.

Increased maneuver training at all sites would increase the use of fuels, solvents, and other hazardous and toxic substances, which might result in indirect impacts to surface and/or groundwater if accidentally released into the environment, however, implementing BMPs including the SPCC Plan would minimize potential impacts resulting from leaks or spills of hazardous materials. Impacts are anticipated to be negligible or minor.

4.21.10 Facilities

4.21.10.1 Affected Environment

Facilities and infrastructure at USAG FWA include Family housing; a road network; community support facilities such as a Child Development Center, police station, credit union, post office, one elementary school, and shops; Bassett Army Community Hospital; outdoor recreational facilities such as downhill skiing, a golf course, fishing, and a variety of water sports; and installation support facilities such as airspace and airfields, and training and range facilities. There are also 11 supply and storage locations found throughout the cantonment area including

two ammunition storage facilities, which are used to store inert supplies, equipment and/or material.

All utility services provided to USAG FWA were privatized in August of 2008. The power distribution system at USAG FWA is being systematically upgraded, and substantial portions of the power system were completely replaced in 2010. A new electrical substation was completed in 2009. Technology upgrades handle 50 percent more load than the currently existing power infrastructure.

As part of its facilities and infrastructure, USAG FWA has its own airfield (Ladd Army Airfield) and also uses nearby Eielson Air Force Base for large-scale deployments. Both military airfields can support any type of military aircraft. Ladd Army Airfield has one active runway, several ancillary taxiways, and hangars.

There are over 1,500 housing units on more than 400 acres of land, spread throughout six neighborhoods on the cantonment area. Due to age of housing, the installation has begun to revitalize Family housing through new construction to upgrade and/or replace substandard facilities through the Army Family Housing Privatization program. Housing requirements for accompanied Soldiers at USAG FWA was privatized in January of 2009, and is managed by the RCI program.

In 2005, the Army commissioned a HMA of assets on USAG FWA to assess the installation's ability to accommodate Soldiers (both with Families or unaccompanied) while meeting DoD's standards for affordability, location, quality, and bedroom requirements. The study reviewed the ability of housing supply in the private sector to absorb growth outside the installation. At the time, the study concluded that based on housing inventories there was an overall shortfall of housing units.

The quality and condition of Army ranges and training lands are managed and monitored as a part of the Army's SRP, which includes the RTLP and the ITAM program. Table 4.21-4 categorizes the types of training range infrastructure provided by USAG FWA and DTA. DTA has no Family housing facilities or community support or recreation facilities.

Table 4.21-4. Acres of U.S. Army Garrison Fort Wainwright and Training Land Facilities

Installation	Small Arms Ranges	Major Weapons Systems Ranges	Non Live-fire Ranges	Maneuver Training Areas	Total
USAG FWA					
Main Post	143	5,793	22	5,151	**11,109**
TFTA	0	58,828	0	595,370	**654,198**
YTA	2,386	25,854	5	229,035	**257,280**
DTA					
DTA	8,539	146,721	4	481,335	**636,599**
Gerstle River Training Area	0	0	0	20,589	**20,589**
Black Rapids Training Area	0	0	0	4,213	**4,213**

4.21.10.2 Environmental Consequences

No Action Alternative

Impacts to facilities would be negligible under the No Action Alternative. USAG FWA currently has adequate facilities available to support its Soldiers, Families and missions. The installation would continue to implement the Army's FRP at USAG FWA. Environmental analyses of the projects that result from these programs are conducted prior to implementation of facilities deconstruction.

Alternative 1: Force Reduction (up to 4,900 Soldiers and Army Civilians)

Minor impacts are anticipated as a result of the implementation of Alternative 1. An increase in the FRP and facilities demolition at USAG FWA would occur as a result of Alternative 1. Older, less efficient facilities nearing the end of their life-cycle would be demolished when no longer needed to support Soldiers or their Families to save the Army on maintenance and energy requirements. Facility usage and availability for the remaining population would not be affected. Minor long-term effects are anticipated as a result of required building demolition, solid waste disposal, and site recapitalization, and the repurposing of existing facilities to accommodate different Army needs as part of force reduction. Alternative 1 would not result in the alteration or relocation of existing utility systems or expansion of existing installation facilities. A reduction in troop strength would impact the local housing community, on-post support services, the barracks program, and associated Army civilian staffing requirements. A troop reduction may also cause a reduction in the rental market available to the RCI program. As a result, the private partner associated with the RCI program could open the on-post military housing to the local population. This could indirectly impact the off-post rental markets. Additional new range construction would likely not occur given the reduction in troop strength as a result of this alternative. A reduction of Soldiers would lead to decreased training range use and a decrease in ammunition and generation of lead and other materials on ranges and within impact areas. Long-term impacts would include the decrease in use of maneuver areas during large brigade-sized and battalion-sized exercises.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would minor impacts to facilities under the No Action Alternative. Increased Soldier strength of 1,000 would be reflected through increased usage throughout the cantonment area.

Long-term effects are anticipated as a result of required construction to support Army growth from BCT restructuring. Construction at the main cantonment area may occur as infill construction between existing structures to accommodate this stationing scenario. These facilities would be tied in to existing utilities and water and wastewater infrastructure.

Family housing has recently been privatized. There will be a shortfall in housing units available to accommodate unaccompanied Soldiers and Soldiers with Families. Increases to housing wait list length and wait time would be projected to occur. New housing units may be constructed at the southeast or northern portion of the installation.

4.21.11 Socioeconomics

4.21.11.1 Affected Environment

USAG FWA is located within the Fairbanks North Star Borough, which according to the U.S. Census Bureau 2010 population estimate, has a total population of 97,581 The Fairbanks North Star Borough region includes the municipalities of Fairbanks and North Pole. According to the U.S. Census Bureau, the average labor force is estimated at 46,125 with a projected median

household income of $66,598 (U.S. Census Bureau, quickfacts.census.gov/qfd/states/02/02090.html). Fort Wainwright is located adjacent to Fairbanks. It is part of the Fairbanks, Alaska MSA. The ROI consists of Fairbanks North Star Borough in Alaska.

Fairbanks, with its diverse economy, is the regional service and supply center for Interior Alaska. The primary industrial sectors are government services (over one-third of total employment, including USAG FWA and Eielson Air Force Base), transportation, communication, manufacturing, financial, and regional medical services. Active Duty military compromised about 17 percent of the FNSB's workforce and Fairbanks' unemployment rate is lower than the statewide average. Population, housing, and economy in the FNSB are greatly influenced by USAG FWA and Eielson Air Force Base.

Fairbanks also serves as the major transportation hub for interior Alaska and for oil operations on the North Slope of Alaska. Primary passenger and cargo air travel service is offered by the Fairbanks International Airport Facility; and the Alaska Highway and Richardson Highway join to connect central Alaska with Anchorage and the continental U.S. There are no roads leading to western Alaska from Fairbanks.

DTA is located within the Southeast Fairbanks Census Region and includes the communities of Delta Junction and Tok, and the Alaska Native villages of Dot Lake, Healy Lake, Northway, Tanacross, and Tetlin. These areas are minimally impacted by military activities conducted at installations in central Alaska, and as such, will not be considered as part of the ROI associated with the Proposed Action. Very few support services are provided by Delta Junction area businesses.

Population and Demographics. The Fort Wainwright population is measured in three different ways. The daily working population is 7,430, and consists of full-time Soldiers and government civilians working on post. The population that lives on Fort Wainwright consists of 3,690 Soldiers and 4,049 dependents, for a total on-post resident population of 7,739. Finally, the portion of the ROI population related to Fort Wainwright is 9,425 and consists of Army Soldiers, and civilian employees, and their dependents living off post.

The ROI population is 97,581. The 2010 population increased 17.8 percent since 2000. The racial and ethnic composition of the ROI is presented in Table 4.21-5.

Table 4.21-5. Racial and Ethnic Composition

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Alaska	64	3	5	5	15	7	1
Fairbanks North Star Borough	74	4	7	6	3	6	0

Employment, Income, and Housing. Compared to 2000, the 2009 employment (private nonfarm) increased by 22.50 percent in Fairbanks North Star Borough. State employment increased by 21.20 percent. Total private nonfarm employment for Fairbanks North Star Borough in 2009 was 26,479 and total private nonfarm employment for the State of Alaska in 2009 was 252,882 (U.S. Census Bureau, quickfacts.census.gov/qfd/states/02/02090.html). The 2005-2009 median home value was $198,200 in Fairbanks North Star Borough, and the state median value was $221,300. The 2010 median household income was $66,598 in Fairbanks North Star Borough. State median income was $66,521 based on 2010 data. The percent of the population below the poverty level was 7.60 percent for Fairbanks North Borough, and the

state poverty level was 9.50 percent (U.S. Census Bureau, quickfacts.census.gov/qfd/states/02/02090.html).

In 2005, the Army commissioned a HMA of assets on and around USAG FWA to assess the installation's ability to accommodate Soldiers (both with Families or unaccompanied) while meeting DoD's standards for affordability, location, quality, and bedroom requirements. The study also reviewed the ability of housing supply in the private sector to absorb growth outside the installation. At the time, the study concluded that, based on housing inventories, there was an overall shortfall of housing units (by approximately 658 units). Conversely, the City of Fairbanks acknowledged that the HMA did not accurately portray housing construction because it relied on building permits required in the City of Fairbanks and North Pole, and did not take into account that building permits are not required in the majority of the Fairbanks North Star Borough. The U.S. Census Bureau recently documented that the Fairbanks North Star Borough has 41,783 housing units, instead of the 34,046 listed in the HMA, and an average of 780 new units per year since 2000 were constructed instead of the 331 average reported in the HMA.

There are 1,976 housing units on more than 400 acres of land, spread throughout six neighborhoods on the cantonment area. Fort Wainwright is able to meet approximately 50 percent of its Family housing requirements on post. Due to the age of housing, the installation has begun to revitalize Family housing through new construction to upgrade and/or replace substandard facilities through the Army Family Housing Privatization program. Housing requirements for accompanied Soldiers at USAG FWA was privatized in January of 2009, and is managed by the Residential Communities Initiative (RCI) program. An estimated 524 units would be constructed and an estimated 321 units would be revitalized under the RCI program. However, USAG FWA has enlisted personnel who require 3, 4, and 5 bedroom homes who are currently on the waitlist and not assigned to a home due to a delay in delivery of the 110 units at Taku Gardens (Tanana Trails).

Schools. Total enrollment in FNSB School District schools for the 2011-2012 school year was nearly 14,300 students, approximately a third of whom were in the elementary schools attended by children living on FWA (FNSB School District, 2012). Elementary school students living on FWA attend either Arctic Light Elementary School located on FWA, Ticasuk Brown Elementary School located in North Pole, or Ladd Elementary School located in Fairbanks. Children living on FWA attend Tanana Middle School and Lathrop High School, which are predominantly civilian schools. Other FNSB schools located near FWA, where military Families living off FWA are most likely to reside, include Denali, Hunter, Joy, Nordale (all elementary schools) and Barnette (kindergarten through 8th grade).

The schools in and around Fairbanks have a lower student-to-teacher ratio and a higher expenditure per pupil than the national average, and have a higher proportion of Native Alaskan students than both the state and national average. Funding for the school districts is largely provided by the State of Alaska and from local contributions (totaling approximately 30 percent of the operating budget in the municipal areas).

Public Services, Health and Safety.

- **Police Services.** The Fort Wainwright Police Department oversees police operations, patrols, gate security, training, traffic accident, and criminal investigations.
- **Fire and Emergency Services.** The Fort Wainwright Fire Department responds to emergencies involving structures, facilities, transportation equipment, hazardous materials, and natural and man-made disasters, and directs fire prevention activities; and conducts public education programs. The Fort Wainwright Fire and Emergency Services Division have mutual aid agreements with the Fairbanks North Star Borough

and the cities of Fairbanks and North Pole. City, borough, and state police departments provide law enforcement in the ROI.

- **Medical Facilities.** Health care services are provided by two hospitals and several clinics, and from Bassett Army Community Hospital on USAG FWA.

4.21.11.2 Environmental Consequences

No Action Alternative

There would be no change anticipated under the No Action Alternative. This alternative would be anticipated to provide a steady-state contribution of economic and social benefits and costs. No additional impacts to housing, public and social services, public schools, or public safety is anticipated.

Alternative 1: Force Reduction (up to 4,900[5] Soldiers and Army Civilians)

Economic Impacts. Alternative 1 would result in the loss of approximately 4,900 Soldiers and Army civilians, each with an average annual income of $58,768.[6] In addition, this alternative would affect an estimated 2,742 spouses and 4,718 dependent children, for a total estimated potential impact to 7,460 dependents. The total population of military employees and their dependents directly affected by Alternative 1 is projected to be 12,375 military employees and their dependents.

Based on the EIFS analysis, there would be significant impacts for employment and population. Significant impacts to income and sales in the ROI are not anticipated. The range of values that would represent a significant economic impact in accordance with the EIFS model is presented in Table 4.21-6. Table 4.21-7 presents the projected economic impacts to the region for Alternative 1 as assessed by the Army's EIFS model.

Table 4.21-6. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 1

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	40.5	40.42	23.35	7.01
Economic Contraction Significance Value	- 19.03	- 15.15	- 6.65	- 1.68
Forecast Value	- 13.36	- 10.45	- 18.80	- 12.68

Table 4.21-7. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	- $292,377,300	- $317,693,100	5,620 (Direct) - 755 (Indirect) - 6,375 (Total)	- 12,375
Percent	-13.36 (Annual Sales)	- 10.45	- 18.80	- 12.68

[5] Calculations used a number of 4,915 Soldiers and civilians for estimating socioeconomic impacts. This number was derived by assuming the loss of the 4,200 Soldiers of the SBCT, 30 percent of the installations remaining Active Duty Soldiers, and up to 15 percent of the civilian workforce. As discussed in Chapter 3, this number is rounded to the nearest hundred personnel when discussing impacts of Alternative 1.

[6] This amount is higher than the figure for other installations because it includes the substantial locality or variable housing allowances paid to military employees in the Fairbanks area. Use of the higher amount was necessary to put the possible changes in proper perspective with the ROI economy.

The total annual loss in direct and indirect sales in the ROI represents an estimated -13.36 percent reduction. Regional income would decrease by 10.45 percent. While approximately 4,900 Soldier and Army civilian positions would be lost within the ROI as a result of the implementation of Alternative 1, EIFS estimates another 705 military contract service jobs would be lost, and an additional 755 job losses would occur indirectly as a result of reduced demand for goods and services within the ROI. The total estimated reduction in employment within the ROI is projected to lead to a loss of 6,375 jobs, or a -18.80 percent change in regional non-farm employment. The total number of employed positions (non-farm) in the ROI is estimated to be approximately 33,900. A significant population reduction of 12.68 percent within the ROI is anticipated as a result of this alternative. Of the approximately 97,581 people (including those residing on Fort Wainwright) that live within the ROI, 12,375 Soldiers, Army civilians, and dependents would no longer reside in the area following the implementation of Alternative 1. This would lead to a decrease in demand for housing, and increased housing availability in the region. This could lead to a slight reduction in median home values. It should be noted that this estimate of population reduction includes civilian and military employees and their dependents. This number likely overstates potential population impacts, as some of the people no longer employed by the military would continue to work and reside in the ROI, working in other economic sectors; however, this would in part be counterbalanced by the fact that some of the indirect impacts would include the relocation of local service providers and businesses to areas outside the ROI.

Table 4.21-8 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 1.

Table 4.21-8. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 1

Region of Influence Impact	Sales Volume	Income	Employment
Total	- $156,488,091 (Local) - $251,217,265 (State)	- $222,498,460	- 5,235 (Direct) - 373 (Indirect) - 5,608 (Total)
Percent	- 7.13 (Total Regional)	- 7.32	- 16.54

The total annual loss in volume from direct and indirect sales in the ROI represents an estimated -7.13 percent change in total regional sales volume according to the RECONS model, an impact that is approximately 6.23 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would decrease by approximately $17.6 million as a result of the loss in revenue from sales reductions, which would only be $80,000 more in lost state sales tax revenue that projected by the EIFS model. Regional income is projected by RECONS to decrease by 7.32 percent, less than the 10.45 percent reduction projected by EIFS. While approximately 4,900 Soldier and Army civilian positions would be lost within the ROI, RECONS estimates another 320 military contract and service jobs would be lost, and an additional 373 job losses would occur indirectly as a result of reduced demand for goods and services in the ROI. The total estimated reduction in demand for goods and services within the ROI is projected to lead to a loss of 5,608 jobs, or a -16.54 percent change in regional employment, which would be 2.26 percentage points lower than the reduction projected by the EIFS model.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 1 would lead to an overall reduction in economic activity in the

ROI of about the same order of magnitude, though the models do predictions do vary considerably for sales volume impacts.

Housing. A reduction in troop strength would impact the local housing community, on-post support services, the barracks program, and associated Army civilian staffing requirements. A troop reduction may also cause a reduction in the rental market available to the RCI program. As a result, the private partner associated with the RCI program could open the on-post military housing to the local population. This would indirectly impact the off-post rental markets.

Schools. The effect on the local school system is not certain. The local school system can also expect some impact due to the loss of revenue via the Department of Education (Federal School Impact Aid program). The Fairbanks North Star Borough School District received approximately $14,428,640 in Federal School Impact Aid for the 2010-2011 school year. That includes $13,463,100 in basic Section 8003(b) allocations, $377,210 in additional funding for special needs children, and $588,330 in Section 7703(a) DoD funds. However, because the State of Alaska is allowed to take Federal Impact Aid funding into account when distributing public education foundation dollars, the economic impact to the FNSB School District is somewhat different. Because of the level of Federal Impact Aid funding received, the state reduced foundation funding to the FNSB school district by $6,012,400. Not all Federal Impact Aid funding is eligible to be offset by the state, but state foundation funding is generally reduced by 56 percent for every Section 8003(b) dollar received. Based on current student counts, about 67 percent or $9.6 million of Federal Impact Aid funding, is attributable to Soldier dependents at Fort Wainwright.

Public Services, Health and Safety. As a result of the implementation of Alternative 1, resident and daytime population levels on Fort Wainwright would decrease and could potentially reduce demand on law enforcement, fire and emergency service providers, and on medical care providers on and off post. Active Duty military, remaining permanent party Soldiers, retirees, and their dependents, would continue to require these services. Fort Wainwright anticipates less than significant impacts to public health and safety under this alternative.

Environmental Justice. As a result of the implementation of Alternative 1, Fort Wainwright does not anticipate that a disproportionate adverse impact to minorities, economically disadvantaged populations or children would occur in the ROI. Fort Wainwright anticipates that job loss would be felt across economic sectors and at all income levels and spread geographically throughout the ROI. The proposed force reduction in military authorizations on Fort Wainwright would not have disproportionate or adverse health effects on low-income or minority populations in the ROI. The racial and ethnic composition of the ROI differs from that of the state as a whole. There are fewer Alaska Native and Asian people in the ROI, but a larger African American and Hispanic population in the ROI. At the state-wide level, adverse impacts in the ROI represent a minor disproportionate adverse impact to the African American and Hispanic population.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Economic Impacts. Alternative 2 would result in the increase of up to 1,000 Soldiers, each with an average annual income of $58,768. In addition, this alternative would affect an estimated 558 spouses and 960 dependent children, for a total estimated potential impact to 1,518 dependents. The total population of military employees and their dependents directly affected by Alternative 2 would be 2,518 military employees and their dependents.

Based on the EIFS analysis, there would be no significant impacts for sales volume, income, employment, or population. The range of values that represents a significant economic impact in

accordance with the EIFS model is presented in Table 4.21-9. Table 4.21-10 presents the projected economic impacts to the region for Alternative 2 as assessed by the Army's EIFS model.

Table 4.21-9. Economic Impact Forecast System and Rational Threshold Value Summary of Implementation of Alternative 2

Region of Influence Economic Impact Significance Thresholds	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Economic Growth Significance Value	40.5	40.42	23.35	7.01
Economic Contraction Significance Value	-19.03	-15.15	-6.65	-1.68
Forecast Value	2.72	2.12	3.82	2.58

Table 4.21-10. Economic Impact Forecast System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Region of Influence Impact	Sales Volume	Income	Employment	Population
Total	$59,486,730	$64,637,460	1,144 (Direct) 154 (Indirect) 1,297 (Total)	2,518
Percent	2.72	2.12	3.82	2.58

The total annual gain in volume of direct and indirect sales in the ROI would represent an estimated 2.72 percent change from the total current sales volume of $2.18 billion within the ROI. Regional income would increase by 2.12 percent. While 1,000 Soldiers would be gained within the ROI, EIFS estimates another 144 direct military contract service jobs would be gained, and an additional 154 jobs would be created indirectly from an increase in demand for goods and services in the ROI. The total estimated increase in employment within the ROI is projected to lead to a gain of 1,297 jobs, or a 3.82 percent change in regional employment. The total number of employed non-farm positions in the ROI is estimated to be 33,909. A population increase of 2.58 percent within the ROI is anticipated as a result of this alternative. Of the estimated 97,581 people (including those residing on Fort Wainwright) that live within the ROI, 2,518 military employees and their dependents would be begin to reside in the area following the implementation of Alternative 2. This would lead to an increase in demand for housing, and decreased housing availability in the region. This could lead to a slight increase in median home values.

Table 4.21-11 shows the total projected economic impacts, based on the RECONS model, that would occur as a result of the implementation of Alternative 2.

Table 4.21-11. Regional Economic System: Summary of Projected Economic Impacts of Implementation of Alternative 2

Regional of Influence Impact	Sales Volume	Income	Employment
Total	$31,838,887 (Local) $51,112,376 (Local)	$45,269,280	1,065 (Direct) 76 (Indirect) 1,141 (Total)
Percent	1.40 (Total Regional)	1.5	3.36

The total annual gain from direct and indirect sales increases in the region represents an estimated 1.40 percent change in total regional sales volume according to the RECONS model, an impact that is 1.32 percentage points less than projected by EIFS; however, it is estimated that gross economic impacts at the state level would be greater. Extrapolating from sales volume numbers presented in the RECONS model, it is anticipated that state tax revenues would increase by approximately $3.06 million as a result of the gain in revenue from sales reductions, which would be $480,000 less in additional state sales tax revenue than projected by the EIFS model. Regional income is projected by RECONS to increase by 1.5 percent, slightly less than the 2.12 percent projected under EIFS. While 1,000 Soldiers would be gained within the ROI, RECONS estimates another 65 military contract and service jobs would be gained, and an additional 76 jobs would be created indirectly as a result of indirect increases in demand for goods and services in the ROI as a result of force increase. The total estimated increase in demand for goods and services within the ROI is projected to lead to a gain of 1,141 jobs, or a 3.36 percent change in regional employment, which would be 0.46 percentage points less than projected by the EIFS model.

When assessing the results together, both models indicate that the economic impacts of the implementation of Alternative 2 would lead to a net increase of economic activity within the ROI of roughly the same magnitude.

Housing. According to the 2005 housing analysis conducted by USAG FWA, there would be a shortfall in available vacant housing space on the installation to accommodate the additional Soldiers. There would be an abundance of buildable space available within the Fairbanks metropolitan area to absorb growth.

USAG FWA currently has enlisted personnel who require 3, 4, and 5 bedroom homes who are currently on the waitlist and not assigned to a home. Should no new homes become available and personnel continued to be assigned, the delay in delivery of the 110 units at Taku Gardens (Tanana Trails) will prolong waiting times, and require Families to acquire off-post housing that is affordable and adequate. Additionally, with the lack of available larger homes, Soldiers and their Families that would normally occupy those homes are finding the need to retain smaller homes on post. Thus, this affects Soldiers and their Families who are eligible for smaller homes on post, in that they must then attempt obtain adequate, affordable housing off post.

Schools. The increase in unit strength would also have an increase in school enrollment. As indicated above, the Fairbanks North Star Borough has a lower student-to-teacher ratio than the national average. The addition of a 1,000 Soldiers may add approximately 225 school-aged children to the school system, spread out from grades K-12. It is anticipated that the school system would be able to absorb this level of student growth without the need for new or expanded facilities.

Public Services, Health and Safety. As a result of the implementation of Alternative 2 resident and daytime population levels on Fort Wainwright would increase and could potentially increase demand on law enforcement, fire and emergency service providers, and on medical care providers on and off post. Active Duty military, civilians, retirees, and their dependents, would continue to demand these services. Fort Wainwright anticipates less than significant impacts to public health and safety as a result Alternative 2.

Environmental Justice. As a result of the implementation of Alternative 2, Fort Wainwright does not anticipate that a disproportionate adverse impact to minorities, economically disadvantaged populations, or children would occur in the ROI. The proposed force increase in military authorizations on Fort Wainwright would not have disproportionate or adverse health effects on low-income or minority populations in the ROI.

4.21.12 Energy Demand and Generation

4.21.12.1 Affected Environment

All Fort Wainwright utilities were conveyed to a private utilities contractor on 15 August 2008. Pursuant to 10 USC 2668, the private utilities contractor was granted an easement that includes non-exclusive access to utility corridors for the purpose of operating, maintaining and upgrading these utilities.

During the first 5 years of operation, all electric facilities at USAG FWA are being completely rebuilt. A new substation was constructed in June of 2009. This station has 50 percent excess capacity (or more) and can be expanded by simply adding an additional transformer. All electrical circuits and supply systems are being constructed with 50 percent extra capacity and loop feed capabilities to accommodate future growth.

USAG FWA has a central coal-fired power plant that produces electricity and steam heat for the installation and is responsible for approximately 95 percent or more of the energy capability throughout USAG FWA. The power plant also provides heat in the form of steam to a majority of structures throughout the cantonment area (many of the buildings there are also heated by individual boilers). The private utilities contractor would install approximately 13 to 18 MW of additional turbine capacity to utilize extra steam. This technology upgrade would make USAG FWA completely energy self-sufficient within the next 2 to 3 years and would allow excess energy to be sent to Fort Greely or to other installations. Power needs at DTA are currently supplied via a combination of the Golden Valley Electric Association, the power plant at Fort Greely, and the power plant at USAG FWA(2004 *USARAK Transformation EIS* (USARAK, 2004)).

4.21.12.2 Environmental Consequences

No Action Alternative

The No Action Alternative would result in negligible effects to existing energy demand and utilization by USAG FWA. USAG FWA would continue to look for ways to reduce energy use and increase energy efficiency as a result of this alternative.

Alternative 1: Force Reduction (up to 4,900 Soldiers and Army Civilians)

Long-term beneficial impacts to the power generation system are anticipated resulting from Alternative 1. Decreases associated with demand on the power plant, energy distribution lines, and infrastructure would result. The overall influence of the force reduction is anticipated to result in a decrease of regional power demand. Less energy resources, including coal and fuel, would be consumed.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

USAG FWA would experience minor impacts from the additional Soldiers and Family members. The installation's current energy infrastructure would be able to accommodate the addition of 1,000 Soldiers and their Family members. An increase in population associated with a stationing scenario would increase demand on the power plant, energy distribution lines, and infrastructure. Given that privatization resulted in technology upgrades and increased efficiency in power and heat distribution; the overall influence that Army growth is anticipated to have to regional power demand and generation capability is anticipated to be a minor impact. There may be additional long-term energy demand in training areas, but demand is anticipated to be slight and inconsequential compared to system capacity.

4.21.13 Land Use Conflicts and Compatibility

4.21.13.1 Affected Environment

Existing land use boundaries are defined for major land use categories identified in the USACE Master Planning Instruction. These have been established as the framework for future land use decisions. Each land use category is evaluated against established criteria to determine compatibilities, constraints, and opportunities. Land use categories are assumed to be compatible with adjacent land uses.

USAG FWA consists of over 1 million acres of land divided into eight land use planning categories; these include transportation, housing, community, installation support, range and training lands, maintenance, outdoor recreation, and miscellaneous.

DTA has 636,599 acres of land which is dedicated to range and training use. The types of military activities covered by this land use include the research, test, and evaluation of and training of military munitions items, explosives, other types of ordnance, and weapons systems.

The public is always allowed access on DTA except for permanently closed areas such as the impact areas and the SAC. In addition, access is closed in specific training areas during military training exercises (only areas being used for training are closed). Sometimes access is restricted during range construction as it currently is for the Battle Area Complex and CACTF construction.

Other Projects and Right-of-ways. The Northern Intertie Project involves the installation of a 230 kV transmission line near the northeast boundary of TFTA. The transmission line has a ROW of 150 to 300 feet wide and 90 to 170 miles long. The Trans-Alaska Pipeline System ROW extends through YTA. Its width is 50 feet plus the ground area occupied by the pipeline. The 50 foot wide Alaska Natural Gas Transportation ROW lies adjacent to the pipeline. The Army and BLM approved an additional ROW for the Trans-Alaska Gas System which will run parallel to the existing pipelines.

Environmental remediation projects under CERCLA, especially in the cantonment area, impact the construction in support of facilities, recreation and roads.

4.21.13.2 Environmental Consequences

No Action Alternative

Under No Action Alternative, no changes to land use conditions would occur. Continuing minor impacts to land use would be anticipated.

Alternative 1: Force Reduction (up to 4,900 Soldiers and Army Civilians)

Minor impacts to land use would be anticipated to occur as a result of the implementation of Alternative 1 at USAG FWA. A reduction in training land use would occur that roughly correlates with the number of Soldiers inactivated or realigned as a result of this alternative in comparison to those remaining at USAG FWA. The loss of up to 4,900 Soldiers and Army civilian employees would decrease use of existing training land and training facilities. Alternative 1 would involve the demolition of some facilities and construction of new facilities within the existing cantonment area. Minor land use impacts from construction and deconstruction at USAG FWA are anticipated. No new range construction would occur as a result of this alternative. In addition, none of the current ranges would be expanded; therefore, no significant effects to land uses are anticipated.

Implementation of the USAG FWA institutional programs, associated land management practices and coordination among Army, federal, state, and local land managers would

continue; however, a reduction in live-fire and maneuver training may increase opportunities for recreational, hunting, and subsistence activities due to more training areas being opened.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be minor impacts from land use conflicts and compatibility anticipated as a result of the implementation of Alternative 1. Up to 1,000 additional Soldiers would require the additional use of training areas and qualification ranges. Construction may impact structures that contribute to the NHL or Historic District. Any construction occurring at the borders of the designated NHL or Historic District may have direct or indirect effects and would require additional consultation with the SHPO. There may also be short-term impacts to land use compatibility from construction noise and from activities that create fugitive dust.

No changes to land use designations within existing ranges or impact areas are anticipated. Increased noise, dust, or other indirect effects associated with these stationing alternatives are not anticipated to affect off-post land uses. Less training land availability for recreational activities such as hunting could occur due to an increase in training activities.

Increased Soldier stationing would also drive increases of summertime maneuver training requirements, as fewer areas would be available for training due to saturated soils that wouldn't support vehicular training. More units would compete for training on available training areas during the summer months. During winter, access to maneuver areas would improve because soil conditions can support training over a much larger land area. Impacts associated with public access closures are anticipated to be minor because alternate areas at these training areas would still be available for recreational and subsistence activities.

4.21.14 Hazardous Materials and Hazardous Waste

4.21.14.1 Affected Environment

USAG FWA is registered with EPA as a Large Quantity Generator of hazardous waste in accordance with the RCRA. There is no treatment facility on-site and all hazardous waste generated at the installation is stored and removed from the installation within 90 days. Hazardous waste at USAG FWA is primarily generated from vehicle maintenance and facilities operations. Hazardous materials include petroleum-contaminated absorbent pads, batteries, light ballasts, mercury containing bulbs, oils and fuels, compressed gas, LBPs, paint thinners and solvents, pesticides, solvents and degreasers, and non-recyclable transmission fluid. Proper management and disposal of hazardous materials and waste is completed in accordance with USAG Alaska Pamphlet 200-1 Hazardous Materials and Regulated Waste Management (USAG Alaska, 2000).

USAG FWA was listed on the EPA National Priorities List on 30 August 1990, under CERCLA of 1980 (Superfund). In 1992, the Army, EPA, and Alaska Department of Environmental Conservation signed a Federal Facility Agreement requiring a thorough investigation of suspected historical hazardous waste source areas and appropriate remediation actions required to protect public health. The installation is in the process of cleanup activities under its IRP, and the discovery of any further contamination as outlined in the Federal Facilities Agreement would require appropriate regulatory coordination and compliance. As part of the investigations, the Army and EPA identified five separate areas requiring remediation; these are discussed in greater detail in Section 3.8 of the *Final EA for Construction and Operation of a Railhead Facility and Truck Loading Complex* (USAG Alaska, 2007).

Most activities that use or generate hazardous materials are conducted in the cantonment area; however, hazardous material is also generated from vehicle maneuvers (spills) and live-fire

activities that produce lead, UXO, and explosive residues. Hazardous wastes are also generated during field training exercises (from vehicle maintenance, accidental spills, etc).

Ammunition, Live-fire, and Unexploded Ordnance. TFTA, YTA, and DTA impact areas include a 2-mile buffer zone. Impact areas and buffer zones are off limits to unauthorized personnel. In addition, all sites are clearly marked with warning signs for the potential risk of UXO.

Petroleum, Oil, and Lubricants. USAG FWA has 13 ASTs with capacities ranging from 300 to 13,000 gallons containing fuel and heating oil. Most of these tanks are double-walled and are inspected annually. Three tanks are single walled but are contained within secondary earthen dikes. These tanks are inspected daily. Because the installation's storage tanks do not exceed 420,000 gallons, an Oil Discharge Prevention and Contingency Plan is not required. The installation has 59 USTs, and these tanks are equipped with electronic monitoring devices that are designed to detect leaks and overfill. USTs are double-walled and are monitored monthly.

Installation Restoration Program. USAG FWA has a large amount of land that is devoted to large scale remediation projects. Due to past contamination on main post, USAG FWA has been classified as a CERCLA site.

Army-related and industrial activity on main post has caused groundwater pollution associated with underground tanks, chemical storage facilities and chemical dump sites. These areas are monitored intensively. Army restoration projects have mitigated damage to groundwater quality, and practices leading to contamination have been discontinued. Of the 127 sites investigated at USAG FWA for cleanup, 38 were identified as Superfund OUs (28 have been closed and no further remediation is planned; 10 sites are still active). Of the remaining 89 sites, 70 have been remediated. Long-term monitoring is being conducted at 18 sites, and 1 site is currently being investigated (USARAK, 2004).

Lead. Many of the Family housing units on the installation were surveyed for LBP. The results of the surveys concluded that most Housing facilities do contain lead, most commonly found in deteriorating paint and on exterior surfaces.

Asbestos. Asbestos-containing materials may include floor tile, linoleum, wallboard, pipe insulation, and tarpaper; all materials that may be found in Family housing units and facilities alike. Most of the buildings on USAG FWA contain some asbestos. While few surveys have been conducted on the installation, surveys are conducted prior to any renovation or demolition work. Asbestos, during renovation or demolition, is removed and disposed of in asbestos cells at local landfills. The installation's neighborhood revitalization programs have resulted in the removal of asbestos from most of the housing units.

Pesticides and Herbicides. These materials are handled in accordance with all applicable regulations including the Integrated Pest Management Plan for USAG FWA. These materials may be used to control rodents and insects at facilities around the main cantonment area, and may be applied at ranges and training areas to control pests and invasive weed species.

Radon*:* Radon surveys were conducted on the installation from 1989 to 1990. Survey results indicated that radon was at acceptable levels.

Hazardous Wastes and Biomedical Waste. Bassett Army Community Hospital ensures proper disposal of biomedical and other types of hazardous human wastes. Two other facilities located at the north and south ends of the installation also store medical and dental wastes.

Non-Hazardous Wastes. FWA disposes of its non-hazardous solid waste at its installation landfill. Though current plans call for the closure of the FWA landfill some time during the next

few years, there exists ample capacity and willingness at the Fairbanks North Star Borough landfill to accept all waste, included any projected increases, from FWA.

Recycling. FWA also has a robust recycling program which includes waste stream materials such as light bulbs; glycols; batteries, POLs; and brass from shell casings.

4.21.14.2 Environmental Consequences

No Action Alternative

During the day-to-day operations at USAG FWA, the installation and its contractors would adhere to existing SOPs and USAG Alaska Pamphlet 200-1 *Hazardous Materials and Regulated Waste Management*, for the handling and transfer of hazardous materials and hazardous wastes and comply with all occupational health and safety standards.

Negligible effects are anticipated under the No Action Alternative. There would be no change in USAG FWA's management of hazardous materials, toxic substances, hazardous waste, or contaminated sites. USAG FWA would continue to manage existing sources of hazardous waste in accordance with the HWMP.

Alternative 1: Force Reduction (up to 4,900 Soldiers and Army Civilians)

Negligible impacts are anticipated as a result of the implementation of Alternative 1. In the short term, there would be an increase in the demolition of outdated and no longer needed facilities. This would increase the volume of solid waste generated. In addition, an increase in asbestos and LBP disposal is anticipated until facility reduction is completed as a result of this alternative. Construction workers and Army personnel would take measures to dispose materials in accordance with regulatory requirements installation management plans. With the implementation of the USAG FWA institutional programs, BMPs and SOPs, impacts are anticipated to be negligible or minor.

The number of required live-fire user days per year at USAG FWA would drop below current levels and no new types of weapons are anticipated to be introduced to training areas; therefore, a reduction in the amounts of ammunition that would be used or in the generation of UXO and lead contamination on training ranges is anticipated. The intensity and frequency of maneuver training at USAG FWA would drop below current levels. There would be less risk of spills of hazardous materials in the training areas and an associated reduction of long-term impacts, though overall, impacts would remain negligible.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Although it is very difficult to forecast the exact increase in hazardous waste that would occur due to Alternative 2, it would be projected to be relatively small and easily managed by existing disposal processes. Hazardous waste is removed from FWA and their associated training lands by utilizing the Defense Logistics Agency's Defense Reutilization and Marketing Service. In discharging its responsibilities, Defense Reutilization and Marketing Service will continue to contract with appropriate hazardous waste disposal contractors, a process that guarantees that there will be suitable recipients for any and all hazardous waste generated at FWA and DTA. Moreover, the amount of hazardous waste to be generated due to this alternative, though very difficult to estimate, is anticipated to be no more than 3-5 percent of current amounts at USAF FWA.

Overall, existing practices are expected to improve health and safety impacts from the use, storage, or disposal of hazardous materials. Negligible impacts from hazardous materials and waste would be anticipated with an increased Soldier strength of up to 1,000 Soldiers and their

Families. Due to the continued efforts of USAG FWA to modernize equipment that would effectively reduce waste, as well as the minimal increases posed by Alternative 2, no significant increases in the use of hazardous materials or generation of hazardous wastes would occur. The storage, use, handling, and disposal of hazardous materials, toxic substances, and hazardous wastes would not increase the risk to human health due to direct exposure, would not increase the risk of environmental contamination, and would not violate applicable federal, state, local, or DoD regulations. Existing management procedures, regulations, plans, and permits would be used to minimize risk. Therefore, impacts regarding hazardous materials and wastes for FWA and DTA are considered to be negligible.

Construction and demolition of structures within the cantonment area would generate hazardous waste due to the presence of asbestos and LBP in some of the older existing structures. The installation would ensure that any removal and disposal of these materials would be in accordance with established federal, Army, and USAG FWA regulations and policy for handling hazardous materials and waste. New construction would involve the testing, recordation, and mitigation (if necessary) for radon.

The increase in Soldiers would result in the generation of biomedical wastes from dental and medical facilities on post. These wastes would be processed in accordance with current SOPs and regulations. Because the installation is already considered a Large Quantity Generator no additional permitting or significant actions are likely to be required.

Alternative 2 would increase the frequency of Soldier live-fire training, thus increasing the amount of lead bullets and other munitions expended in the range area. Live-fire small arms ranges would retain their berms to stop projectiles fired at the ranges. Although more lead would be fired into impact berms, the installation has mitigation measures in place to ensure berms are well maintained and re-graded as needed to prevent erosion.

No new weapon types would be introduced to USAG FWA training areas. Handling and storage methods, disposal protocols, and safety procedures would continue to be conducted in accordance with existing regulations.

Transportation of personnel and use of flammable or combustible materials, such as fuel or ordnance (i.e., weaponry or equipment), would increase the potential for spills or releases of hazardous materials to the environment. BMPs would continue to be exercised throughout the garrison. USAG FWA's existing programs, management plans, and regulations that govern handling, use, storage, and disposal of hazardous and non-hazardous materials would remain in place. All spills should be cleaned immediately in accordance with USAG FWA Pamphlet 200-1.

4.21.15 Traffic and Transportation

4.21.15.1 Affected Environment

USAG FWA has two primary roads that lead onto the installation, with four main roads and numerous secondary roads used for transportation on the installation. The transportation services available to DTA (and Delta Junction) include the Richardson and Alaska highways. The highways both have two lanes and undergo year-round maintenance. The state has recently (in 2007) constructed several passing lanes on the Richardson Highway between Fairbanks and Delta Junction specifically to help alleviate traffic issues with convoys running between USAG FWA and DTA.

Military convoy traffic can be a nuisance concern on state highways and may occasionally be perceived as severe enough to be a potential human health and safety risk. Military convoys are most common between USAG FWA main post and YTA or DTA. Army convoys are subject

to a permitting process in conjunction with the Alaska Department of Transportation. Large convoys are broken up into smaller components called serials, consisting of no more than 20 vehicles with 20 to 30 minute gaps between departures to reduce traffic impacts. Highway speeds cannot exceed 40 mph.

The Alaska Railroad provides rail service to USAG FWA. The main line passes through the central cantonment area, with spur tracks serving the central heating and power plant and warehouse circle. DTA has no rail service.

Aviation is an essential component of transportation in the USAG FWA region. The civilian community utilizes Fairbanks International Airport. USAG FWA has its own airfield and also uses nearby Eielson Air Force Base for large-scale deployments. Both military air fields can support any type of military aircraft. Ladd Army Airfield has one active runway, several ancillary taxiways, and hangars. The runway is classified as Class C Airspace. Allen Army Airfield is located at Fort Greely, adjacent to DTA, and is also classified as Class C Airspace.

4.21.15.2 Environmental Consequences

No Action Alternative

Minor impacts are anticipated under the No Action Alternative. Surveys and studies conducted on the existing transportation system determined that it is sufficient to support the current traffic load.

Alternative 1: Force Reduction (up to 4,900 Soldiers and Army Civilians)

Beneficial long-term effects would be anticipated from the decrease in military fleet vehicles and POVs, likely alleviating the traffic flow issues at the Main Gate entrance to the installation. With the implementation of Alternative 1, the Soldier population would decrease and there would be less traffic competing with seasonal (summertime and spring) traffic conditions associated with tourism. A reduction in military use of range roads or trails within USAG FWA training areas would occur. In addition, impacts to local highways associated with military convoys would also be reduced. Potential conflicts between civilian use and military use of local roadways would be reduced proportionately with the reduction in overall military population at USAG FWA.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

There would be minor, short- and long-term impacts on traffic and transportation systems. Construction equipment and worker vehicles would have short-term impacts at the Main Gate and at the roads around any designated construction sites. It is likely that impacts to traffic patterns on post would be negligible to minor resulting from a 1,000 Soldier stationing alternative.

Long-term effects would be anticipated from the increase in military fleet vehicles and POVs, potentially causing minor flow issues at the Main Gate entrance to the installation. With Alternative 2, the Soldier population would increase by 1,000. The added traffic from these units would compete with seasonal (summertime and spring) traffic conditions associated with tourism; however, the addition of passing lanes on the Richardson Highway would help to alleviate congestion as a result of current seasonal traffic conditions. Also, traffic utilizing the various main post access gates during morning and evening times may cause minor congestion for short periods of time.

Short-term effects from construction equipment in the Small Arms Range Complex area are anticipated. The action would temporarily increase traffic to construction sites, affecting the flow within the Range Complex and potentially the Richardson Highway and local communities

surrounding the installation. It is likely that impacts to traffic patterns would be negligible to minor as a result of the implementation of Alternative 2. Impacts would be anticipated on local highways from military convoys. The garrison enforces a convoy procedure permitting groups of vehicles (or serials). Following this procedure reduces the impact to traffic on these major highways. Also, with the addition of new passing lanes, overall impacts would be negligible to minor.

4.21.16 Cumulative Effects

Region of Influence

The ROI for this cumulative impact analysis of Army 2020 realignment at USAG FWA encompasses the cites of Fairbanks, North Pole and Delta Junction, Alaska, as well as the Fairbanks North Star Borough and the Unincorporated Borough of Delta Junction, unless otherwise stated in the analysis below. Fairbanks is the largest city within the ROI. Approximately 100 miles separate Delta Junction, and Fairbanks and North Pole. USAG FWA has long been a key component of the economy of the interior Alaskan region, employing several thousand Soldiers and civilian employees within the ROI. USAG FWA has been in operation supporting the DoD since 1939.

There are numerous planned or proposed actions within the ROI that have the potential to cumulatively add impacts to Army 2020 alternatives. These actions are either in progress or reasonably could be initiated within the next 5 years. A number of the Army's proposed projects have been previously identified in the installation's Real Property Master Planning Board and are programmed for future execution. A list of projects below presents some of the projects which may add to the cumulative impacts of the implementation of Army 2020 realignment alternatives.

U.S. Army Garrison Fort Wainwright Projects (Past, Present, and Reasonably Foreseeable)

- Stationing of military training support equipment to include vehicles, aircraft and other materiel.
- Programmed FY 2012 to FY 2018 MILCON at USAG FWA. Specific SBCT-related projects include an Unaccompanied Personnel Housing 294-Soldier barracks and at 4-plex Company Operations Facility, Battalion Operations Facility Headquarters with classrooms, organizational storage and parking. These projects are currently identified for FY 2013 and FY 2016, respectively, but could be reprioritized to FY 2018.
- Determination of future disposition of two historic hangars on Ladd Air Airfield.
- Updates to existing INRMPs and ICRMPs.

Other Agency (DoD and non-DoD) and Public/Private Actions (Past Present and Reasonably Foreseeable)

- Current resource management programs, land use activities and development projects that are being implemented by other governmental agencies and the private sector to include training and testing activities conducted at USAG FWA and associated training lands by the U.S. Air Force and Cold Regions Test Center.
- Continued participation with the Fairbanks North Star Borough and Eielson Air Force Base in support of the JLUS for Fairbanks and North Pole.
- U.S. Air Force stationing actions occurring at Eielson Air Force Base, to include potential realignment of F-16 aircraft from Eielson Air Force Base to Elmendorf Air Force Base.
- Augmentation of airspace designations by U.S. Air Force.

- Development of the Joint Pacific Alaska Range Complex, a Proposed Action to enhance joint training opportunities for the Army and Air Force in Alaska by incorporating existing land and airspace assets into a holistic training venue.
- Evaluation, consolidation and enhancement of testing operations conducted by Cold Regions Test Center at DTA.
- Updates to land management plan applicable to surrounding State of Alaska lands.
- Updates to land management plans applicable to surrounding BLM lands.

USAG FWA anticipates a range of cumulative effects resulting from the implementation of the Proposed Action and alternatives. Cumulative impacts for each alternative are as follows:

No Action Alternative

Beneficial through significant but mitigable adverse cumulative impacts would be anticipated from implementing the No Action Alternative. Under the No Action Alternative, no changes in military authorizations, or local environmental conditions would be anticipated. Installation facility shortages and excesses would remain at their currently planned levels without additional stationing or force reductions. The Army would continue to implement some facilities reductions of outdated/unused facilities. Under the No Action Alternative, cumulative impacts to the following VECs would have no impact, or have a minor impact only and are not carried forward for detailed discussion in this section. These VECs are: air quality, airspace, noise, soil erosion, biological resources, wetlands, water resources, facilities, socioeconomics, energy demand and generation, land use conflict and compatibility, hazardous materials and hazardous waste, and traffic and transportation. Cumulative impacts under the No Action Alternative that would be more than minor are cultural resources.

Past, present, and reasonably foreseeable demolitions and modifications to facilities that are eligible for listing in the NRHP and are a part of the Ladd Field NHL could result in adverse effects to both the individual buildings and the NHL as a whole. Additional NEPA analysis and compliance with Section 106 and Section 110 of the NHPA would be required if a specific undertaking associated with facility demolition in support of Army 2020 reductions is proposed for USAG FWA. Conversely, modifications to cultural resource management associated with current updates to USAG FWA's ICRMP could reduce adverse impacts through actions that avoid, minimize or mitigate to less than significant impacts through the NHPA Section 106 process.

Alternative 1: Force Reduction (up to 4,900 Soldiers and Army Civilians)

Cumulative impacts as a result of the implementation of Alternative 1 range from beneficial impacts to significant socioeconomic impacts. As a result of Alternative 1, the Army anticipates beneficial to minor adverse cumulative impacts to air quality, airspace, noise, soils, biological resources, wetlands, water resources, facilities, energy demand, land use conflict, hazardous materials and waste, and traffic and transportation. The reduction of Soldiers on Fort Wainwright would result in less training and a reduced frequency of garrison environmental support activities. When viewed in conjunction with other past, present and reasonably foreseeable projects, the overall cumulative effect of Alternative 1 are projected to be either beneficial or no more than minor adverse impacts.

As a result of Alternative 1, the Army anticipates significant but mitigable cumulative adverse impacts to cultural resources.

Cultural Resources. Potential demolition of facilities, as proposed as a result of the implementation of Alternative 1, that are eligible for listing in the NRHP and also are a part of the Ladd Field NHL, in conjunction with other historic facility disposition proposals being

considered by USAG FWA, could result in adverse effects to both the individual buildings and the NHL as a whole. Additional NEPA analysis and compliance with Section 106 and Section 110 of the NHPA would be required if a specific undertaking associated with facility demolition in support of Army 2020 reductions is proposed for Fort Wainwright.

Socioeconomics. The cumulative socioeconomic impact within the ROI under Alternative 1 would be a significant adverse impact on the regional economy. Regionally, off-post unemployment has risen within the ROI from 2008 to 2012. In conjunction with other staffing declines currently being considered by the DoD, other actions may contribute to a significant regional economic impact. Cumulatively, with a reduction of military and civilian personnel at Fort Wainwright, in combination with proposed reductions at Eielson Air Force Base, the regional economy may contract in a manner that impacts a substantial portion of the region's total revenue. A reduction of 4,915 Soldiers, civilians and their dependents in conjunction with these actions would cumulatively have a negative impact on the regional local economy.

Alternative 2: Installation gain of up to 1,000 Combat/Combat Support Soldiers resulting from Brigade Combat Team Restructuring and Unit Realignments

Cumulative impacts of Alternative 2 are projected to range from beneficial to significant but mitigable impacts. The following VEC areas that are anticipated to experience no more than a minor cumulative impact are: air quality, noise, soils, biological resources, wetlands, water resources, facilities, socioeconomics, energy demand, land use conflict, hazardous materials and waste, and traffic and transportation.

Cumulative airspace impacts would be less than significant. Cumulative impacts to cultural resources would be anticipated to be significant but mitigable.

Airspace. Additional live-fire training associated with Alternative 2 would increase the activation of SUA for military operations. This action, when considered with the Joint Pacific Alaska Range Complex proposal would add additional military airspace uses and would increase impacts, though they would remain less than significant.

4.22 SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS

Implementation of the Proposed Actions (Alternative 1: Force Reduction of Soldiers and Army Civilians and Alternative 2: Installation Gain of Combat/Combat Support Soldiers resulting from Brigade Combat Restructuring and Unit Realignments) would result in impacts to the natural, cultural, and socioeconomic environment at each of the 21 installations evaluated.

Table 4.22-1 summarizes the intensity of impacts on a variety of VECs that would be anticipated under the No Action Alternative. The majority of potential impacts would be negligible to minor, with some less than significant impacts. Significant but mitigable impacts are anticipated to occur at: Fort Bliss for traffic and transportation; Fort Bragg for soil erosion and transportation; Fort Gordon for land use; JBER for cultural and biological resources; JBLM for water resources and socioeconomics; Fort Wainwright for cultural resources, and USAG-HI for cultural; resources, noise, soil erosion, and biological resources, and traffic and transportation (O'ahu).

Table 4.22-2 summarizes the intensity of impacts on VECs that would be anticipated as part of the implementation of Alternative 1: Force Reduction. The majority of potential impacts anticipated to VECs would be negligible to minor, and beneficial, with a few less than significant impacts. Significant but mitigable impacts are anticipated to occur at: Fort Gordon for land use; and JBER, Fort Sill ,USAG-HI, and Fort Wainwright, for cultural resources. Significant socioeconomic impacts are anticipated at: Fort Benning, Fort Bliss, Fort Bragg, Fort Campbell, Fort Carson, Fort Drum, Fort Gordon, Fort Hood, JBER, JBLE, Fort Knox, Fort Lee, Fort Leonard Wood, Fort Polk, Fort Riley, USAG-HI, Fort Sill, Fort Stewart, and Fort Wainwright.

Table 4.22-3 summarizes the intensity of impacts on VECs that would be anticipated as part of the implementation of Alternative 2: Installation Gain of Combat/Combat Support Soldiers. The majority of potential impacts would be negligible to minor, or less than significant, with some beneficial impacts. Significant but mitigable impacts are anticipated to occur at: Fort Bliss for traffic and transportation; Fort Campbell for traffic and transportation; Fort Carson for air quality, soil erosion (also at PCMS), facilities, traffic and transportation; JBER for cultural and biological resources; USAG-HI for biological and cultural resources, noise, soil erosion, facilities, water resources, and traffic and transportation (O'ahu); and Fort Wainwright for cultural resources. No significant environmental impacts are anticipated as part of the implementation of Alternative 2. Fort Riley is anticipated to experience a significant socioeconomic impact under Alternative 2 with regard to projected increases in ROI population.

No specific mitigation measures are required to reduce any impacts discussed within the VEC environmental consequences sections of each of the 21 installations to less than significant. This is because continued adherence by installations to their existing SOPs, BMPs, and installation management programs (such as ITAM, INRMP, and ESMP), and consultations with appropriate outside agencies would reduce impacts to less than significant.

The other military services will also have to make adjustments to meet the DoD budget goals discussed in Chapter 1. These may occur through changes in procurement and/or reductions in personnel. At some locations, such as the Joint Bases discussed in the PEA, those reductions, when combined with the Army reductions described in Alternative 1, could affect the cumulative impacts. As of October 2012, however, the other services could not provide any specific projections that would allow the Army to quantify or describe these cumulative impacts. This PEA analysis may assist the other services, in analyzing cumulative impacts of their proposed actions, as they prepare their own NEPA analyses.

Table 4.22-1. Potential Environmental Impacts of the No Action Alternative

Valued Environmental Component	Air Quality	Airspace	Cultural Resources	Noise	Soil Erosion	Biological Resources	Wetlands	Water Resources	Facilities	Socioeconomics	Energy Demand and Generation	Land Use Conflict and Compatibility	Hazardous Materials and Hazardous Waste	Traffic and Transportation
Fort Benning	M	M	M	LS	LS	LS	LS	LS	M	B	M	LS	M	M
Fort Bliss	M	M	N	N	M	N	N	M	N	N	N	M	M	SM
Fort Bragg	M	M	N	M	SM	N	M	N	N	M	M	M	N	SM
Fort Campbell	N	N	N	N	M	N	N	M	N	M	N	N	N	N
Fort Carson/PCMS	LS/M	N/N	N/N	N/N	LS/LS	N/N	M/N	M/N	M/N	N/N	N/N	N/N	M/M	LS/N
Fort Drum	M	N	M	N	N	M	M	N	N	M	M	N	N	M
Fort Gordon	N	N	N	N	N	N	N	N	LS	N	N	SM	N	N
Fort Hood	M	N	N	N	M	M	N	M	N	M	N	N	N	N
Fort Irwin	M	M	M	N	M	M	N	LS	M	M	N	M	M	M
Joint Base Elmendorf-Richardson	LS	M	SM	M	LS	SM	LS	M	M	B	M	M	LS	LS
Joint Base Langley Eustis	M	N	M	N	N	M	M	N	M	M	M	N	M	LS
Joint Base Lewis-McChord	LS	LS	LS	S	N	LS	N	SM	LS	SM	N	M	M	S
Fort Knox	M	N	N	N	M	N	N	M	N	M	N	N	N	N
Fort Lee	N	N	M	N	N	N	N	N	N	B	N	N	N	N
Fort Leonard Wood	N	N	N	N	N	N	N	N	N	B	N	N	N	N
Fort Polk	N	N	N	N	M	N	N	N	N	N	N	N	N	N
Fort Riley	M	N	N	N	M	N	N	M	N	B	N	N	N	N
USAG-HI (O'ahu)/(PTA)	LS/LS	M/M	SM/SM	SM/SM	SM/SM	SM/SM	M/N	M/M	M/M	M/M	LS/LS	LS/LS	M/M	SM/LS
Fort Sill	B	N	LS	SM	N	N	N	N	N	M	N	N	N	M
Fort Stewart	M	M	N	N	M	N	M	M	N	N	N	N	N	M
Fort Wainwright	M	M	SM	M	M	M	M	M	N	M	N	M	N	M

KEY: B = Beneficial, LS = Less than Significant, M = Minor, N = Negligible/No Impact, S = Significant, SM = Significant but Mitigable

Table 4.22-2. Potential Environmental Impacts of Alternative 1: Force Reduction of Soldiers and Army Civilians at Installations

Valued Environmental Component	Air Quality	Airspace	Cultural Resources	Noise	Soil Erosion	Biological Resources	Wetlands	Water Resources	Facilities	Socioeconomics	Energy Demand and Generation	Land Use Conflict and Compatibility	Hazardous Materials and Hazardous Waste	Traffic and Transportation
Fort Benning	B	M	M	M	M	M	M	M	B	S	B	M	M	B
Fort Bliss	B	M	M	B	B	B	N	B	N	S	B	M	M	B
Fort Bragg	B	M	M	B	B	B	B	B	B	S	M	M	M	B
Fort Campbell	N	N	N	N	B	N	N	B	B	S	B	N	N	B
Fort Carson/PCMS	B/B	B/B	B/B	B/B	B/B	B/B	B/B	B/B	B/N	S/N	B/N	N/N	B/B	B/B
Fort Drum	M	N	M	N	N	M	B	N	B	S	B	N	N	M
Fort Gordon	N	N	N	N	N	N	N	N	LS	S	N	SM	N	B
Fort Hood	B	N	M	N	B	B	N	B	M	S	B	N	N	B
Fort Irwin	B	B	B	N	B	B	N	B	M	LS	B	M	M	B
Joint Base Elmendorf-Richardson	B	B	SM	B	M	M	B	B	M	S	B	M	LS	B
Joint Base Langley Eustis	B	N	M	B	B	M	B	N	B	S	B	N	M	B
Joint Base Lewis-McChord	M	N	M	LS	N	B	N	B	B	LS	B	B	LS	B
Fort Knox	B	N	M	B	B	N	N	B	M	S	N	N	M	B
Fort Lee	B	N	M	B	N	N	N	N	B	S	B	B	M	B
Fort Leonard Wood	N	N	M	N	N	N	N	N	B	S	B	N	M	B
Fort Polk	B	N	N	N	N	N	N	B	B	S	B	N	M	B
Fort Riley	B	N	M	B	M	B	N	B	M	S	B	N	M	B
USAG-HI (O'ahu)/(PTA)	B/B	B/B	SM/SM	B/B	B/B	B/B	M/M	M/B	B/B	S/N	B/B	B/B	B/B	B/B
Fort Sill	B	N	SM	B	N	N	N	B	B	S	B	B	LS	B
Fort Stewart	B	N	M	B	N	B	B	N	M	S	B	B	M	B
Fort Wainwright	B	B	SM	B	M	M	M	M	M	S	B	M	N	B

KEY: B = Beneficial, LS = Less than Significant, M = Minor, N = Negligible/No Impact, S = Significant, SM = Significant but Mitigable

Table 4.22-3. Potential Environmental Impacts of Alternative 2: Installation Gain of Combat/Combat Support Soldiers Resulting from Brigade Combat Team Restructuring and Unit Realignments

1

Valued Environmental Component	Air Quality	Airspace	Cultural Resources	Noise	Soil Erosion	Biological Resources	Wetlands	Water Resources	Facilities	Socioeconomics	Energy Demand and Generation	Land Use Conflict and Compatibility	Hazardous Materials and Hazardous Waste	Traffic and Transportation
Fort Benning	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fort Bliss	M	M	LS	M	M	M	N	LS	N	B	M	M	M	SM
Fort Bragg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fort Campbell	N	N	N	N	M	N	N	M	LS	B	M	N	N	SM
Fort Carson/PCMS	SM/LS	LS/M	M/M	M/M	SM/SM	LS/LS	M/N	M/M	SM/N	B/N	M/N	M/N	M/M	SM/N
Fort Drum	M	N	M	N	N	M	M	N	M	LS	LS	M	N	M
Fort Gordon	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fort Hood	M	N	M	M	M	M	N	M	M	B	M	N	N	M
Fort Irwin	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Joint Base Elmendorf-Richardson	LS	M	SM	LS	LS	SM	LS	LS	LS	B	M	LS	LS	LS
Joint Base Langley Eustis	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Joint Base Lewis-McChord	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fort Knox	M	N	N	M	M	N	N	M	LS	B	N	M	N	M
Fort Lee	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fort Leonard Wood	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fort Polk	M	N	N	N	M	N	M	M	LS	N	N	M	M	M
Fort Riley	M	M	M	M	M	M	N	M	M	S	M	N	N	M
USAG-HI (O'ahu)/(PTA)	LS/LS	M/M	SM/SM	SM/SM	SM/SM	SM/SM	M/N	SM/LS	SM/SM	LS/N	M/M	M/M	LS/LS	SM/LS
Fort Sill	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fort Stewart	M	M	M	M	LS	M	M	M	LS	B	M	M	M	LS
Fort Wainwright	M	M	SM	M	M	M	M	M	M	B	M	M	N	M

KEY: B = Beneficial, LS = Less than Significant, M = Minor, N = Negligible/No Impact, S = Significant, SM = Significant but Mitigable

4.23 CONCLUSION

The PEA's analysis of the impacts associated with the implementation of the Proposed Action has not identified any significant environmental impacts, other than socioeconomic impacts, under either of the alternatives analyzed. As discussed in Section 4.22, impacts include effects to air quality, airspace, cultural resources, noise, soil erosion, biological resources, wetlands, water resources, facilities, socioeconomics, energy demand, land use, and traffic and transportation. The continued adherence to the SOPs, BMPs, and various existing installation management plans (e.g., ITAM, INRMP, and ESMP), as well as outside agency consultation would ensure that no significant impacts, other than socioeconomic impacts, would result from the Proposed Action. The PEA identifies some significant socioeconomic impacts, but these by themselves do not require preparation of an EIS. Under either alternative, no specific mitigation measures are needed to reduce the anticipated impacts to less than significant. Therefore, an EIS is not required, and a draft FNSI has been prepared. A Notice of Availability of the final PEA and draft FNSI has been published in the *Federal Register* and *USA Today*. Local announcements in the vicinities of the 21 installations analyzed in the PEA will also be made, inviting the public and all interested parties to provide comment during the 30-day review period.

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4.24 CUMULATIVE EFFECTS

4.24.1 NATIONWIDE CUMULATIVE IMPACT

In addition to the cumulative impacts discussed under each installation section, there are some resources for which the Army 2020 action as a whole could have a nationwide cumulative effect. Those resources are discussed in this section.

4.24.1.1 Greenhouse Gases and Climate Change

There is broad scientific consensus that humans are changing the chemical composition of Earth's atmosphere. Activities such as fossil fuel combustion, deforestation, and other changes in land use are resulting in the accumulation of GHGs, such as CO_2, in our atmosphere. An increase in GHG emissions is said to result in an increase in the average temperature of the Earth's atmosphere and oceans, which is commonly referred to as "global warming". Global warming is expected, in turn, to affect weather patterns, average sea level, ocean acidification, chemical reaction rates, precipitation rates, etc., which is commonly referred to as climate change. The Intergovernmental Panel on Climate Change best estimates are that the average global temperature rise between 2000 and 2100 could range from 0.6 degrees Celsius (about 33 degrees Fahrenheit) (with no increase in GHG emissions above year 2000 levels) to 4.0°Celsius (about 39°Fahrenheit) (with substantial increase in GHG emissions). Large increases in global temperatures could have considerable adverse impacts on natural and human environments.

GHGs include water vapor, CO_2, CH_4, N_2O, ozone, and several hydrocarbons and chlorofluorocarbons. Water vapor is a naturally occurring GHG and accounts for the largest percentage of the greenhouse effect. Next to water vapor, CO_2 is the second-most abundant GHG. Uncontrolled CO_2 emissions from power plants, heating sources, and mobile sources are a function of the power rating of each source, the fuel consumed, and the source's net efficiency at converting the energy in the feedstock into other useful forms of energy (e.g., electricity, heat, and kinetic). Because CO_2 and the other GHGs are relatively stable in the atmosphere and essentially uniformly mixed throughout the troposphere and stratosphere, the climatic impact of these emissions does not depend upon the source location on the earth (i.e., regional climatic impacts/changes will be a function of global emissions).

Army installations produce GHGs through vehicle use, heating and cooling of buildings, electricity generation, munitions explosions, and other activities. In both of the action alternatives, the Army would reduce its Soldier strength from 562,000 to 490,000. It would also reduce employment of civilians and contractor personnel. This reduction would occur over a number of years and its effects would be felt at installations all over the country. It would mean that there will be a net reduction of vehicle engine use, of munitions use, and of energy consumption. The people, of course, would not simply disappear. People who would have been in the Army in 2020, for instance, very likely still would be living in the U.S. and would be engaged in activities that result in GHG emissions such as commuting to and from locations other than Army installations. GHG emissions would likely be marginally higher than if the Army did not implement the Proposed Action and were to continue operating some of the larger vehicles and equipment used by its Soldiers. That total difference would be hard to quantify, however. In the final analysis, the net effect of the Army 2020 transformation would be very small compared to the nation's overall GHG emissions and would have no significant cumulative effect on climate change.

4.24.1.2 Cumulative Economic Effect

The loss of approximately 72,000 Soldier jobs and additional civilian positions would have a cumulative economic effect. It is important to remember that the Soldiers in these units would

not all be suddenly discharged from the Army when their units are inactivated. Some would leave the Army through the normal course of events, to include retirement, and others would be reassigned to other units. In addition, the Army would also use involuntary separation programs and policies to reduce the size of the force. All of these should be spread over the course of the Army's realignment and reduction of its forces over a period of several years. There would not be a flood of military employees entering the job market. In addition, some people would leave the Army and go into retirement and not seek employment in the civilian job market.

Nevertheless, by 2020 there would be 72,000 people in the U.S. who otherwise might be employed as Soldiers in the Army, as well as people who otherwise might be Army civilian or contractor employees. These people would be competing in the job market and could mean that the people with whom they compete have lower paying jobs or no job at all. Of course, by the same token, some of the military employees could become entrepreneurs and create businesses that create jobs.

As of September 2012, 133,500,000 people were employed in non-farm jobs in the U.S. The reduction of the Army to 490,000 Soldiers represents about .05 percent of this total. For this reason alone, the effect would not be significant. In addition, the negative effect on nationwide employment would be offset as people with discipline and skills developed in the military enter the job force and are productively employed.

There are some states with more than one installation that have the potential for substantial losses that have been included in this analysis. These are Texas (Fort Bliss and Fort Hood), Georgia (Fort Stewart, Fort Benning, and Fort Gordon), Virginia (Fort Lee and JBLE), Alaska (Fort Wainwright and JBER) and Kentucky (Fort Knox and part of Fort Campbell). In these states, the economic impacts of the loss of employment in the individual ROIs could combine to produce a greater impact statewide. In Georgia, for instance, all three installations could see significant economic impacts, and these could have a cumulative effect on the overall state economy. Forts Stewart and Gordon are close enough that the economic impacts could combine to produce a cumulatively greater regional effect. Both of these sites already could have significant local economic effects; the cumulative effect could add to that already-significant impact. Fort Benning is far enough away, however, so that this would not happen. The installations in Texas, Kentucky, and Alaska are also distant enough from each other that a regional cumulative effect is not expected. JBLE and Fort Lee, however, are close enough that their impacts could combine to produce adverse cumulative impacts. It is possible that this could mean that Fort Lee's less than significant impacts could be amplified by force reductions at JBLE to some extent, though the ROIs of the installations do not overlap.